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ABSTRACT

The major objectives of this investigation were to: (a) describe and compare the social interaction patterns of handicapped and nonhandicapped children in integrated early education classes; (b) identify characteristics of the classrooms and the teachers that were related to these patterns of social interaction; (c) identify child characteristics that were related to these patterns of social behaviors; and (d) determine if certain program and teacher characteristics differentially related to the social interactions of young handicapped and nonhandicapped children. Fifty-eight early education and day care classrooms in central Pennsylvania that met the criteria of enrolling both handicapped and nonhandicapped preschool age children and being willing to participate provided the sample for this study. From each classroom, one handicapped child was selected randomly and was matched with a nonhandicapped child on the basis of sex and chronological age; 116 subjects participated in the study. Child-child interactions and teacher-child interactions were recorded during thirty-minute observations during free play activities. The trained observer used a twenty-second rotating time sampling procedure; recording first the behavior of one child then the behavior of the "match" child. The data suggest that, although handicapped children are not socially isolated or rejected, there are quantitative differences in their levels of social behaviors that differentiate them from their nonhandicapped classmates. Areas of future research and suggestions for environmental intervention are discussed. (Author/RH)

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DIVISION OF INDIVIDUAL AND FAMILY STUDIES

A Naturalistic Study of the Conditions and Characteristics Promoting Social Integration of Handicapped Children in Early Childhood Education Classrooms

Final Report
November 30, 1979

Carol Wegley Brown, Ph.D.
Project Co-Director

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College of Human Development
The Pennsylvania State University

Bureau of Education of the Handicapped
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November 30, 1979

COLLEGE OF HUMAN DEVELOPMENT
PENNSYLVANIA STATE UNIVERSITY
UNIVERSITY PARK, PA. 16802

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February 1979 - November 1979

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EXECUTIVE SUMMARY

Introduction

The promotion of social integration represents a complex and dynamic inter-relationship between the many characteristics of the children, the integrated class setting, and the transactions that take place among the children, setting, and program. The present study provided the first level of analyses of the complex processes of successful social integration of handicapped and nonhandicapped children in early childhood classes. It was demonstrated in this study that the levels of an individual child's social interactions were related to both the characteristics of the child and the contextual variables of the social and physical setting. Although individual attributes or characteristics (i.e., age, developmental status, sex, and such) may be predictive of children's social interaction and play behaviors, the present study provided evidence to support the influence of contextual classroom variables upon the successful integration of young handicapped children.

The major objectives of this investigation were to: (a) describe and compare the social interaction patterns of handicapped and nonhandicapped children in integrated early education classes; (b) identify characteristics of the classrooms and the teachers that were related to these patterns of social interaction; (c) identify child characteristics that were related to these patterns of social behaviors; and (d) determine if certain program and teacher characteristics differentially related to the social interactions of young handicapped and nonhandicapped children. For the purposes of this study, social integration in early childhood education and day care classes was defined as the degree of similarity in the patterns and levels of eight positive social interaction and play behaviors of selected handicapped and nonhandicapped children.

Method

Sample

Fifty-eight early education and day care classrooms in central Pennsylvania that met the criteria of enrolling both handicapped and nonhandicapped preschool age children and being willing to participate provided the sample for this study. Comparison of the characteristics of children in these programs with existing state and national data indicated they were typical of most Head Start and day care classrooms. From each classroom, one handicapped child was selected randomly and was matched with a nonhandicapped child on the basis of sex and chronological age.

Measures

Social interaction variables. Child-child interactions and teacher-child interactions were recorded during thirty minute observations during free play activities. The trained observer used a twenty-second rotating time sampling procedure; recording first the behavior of one child then the behavior of the "match" child. Hence, fifteen minutes of behavior were recorded for each child. Notation was made as to the initiator and recipient of each social interaction, the active or passive nature of the behavior and its location. A modified Parten Scale was used to classify the child's behavior into categories of: 1) engaged with adults, 2) unoccupied, 3) onlooker, 4) intent on individual activity, 5) parallel, 6) associative, and 7) cooperative play. Interobserver agreement was maintained at levels above 70% throughout the period of data collection.

A weighting system that incorporated both the frequency of interactions (active) and level of social play was used to generate an overall interaction level for each child.

Predictor variables. Three sets of antecedent predictor variables also were obtained.

Child characteristics: (1) The child's developmental level as assessed by the teacher using the Denver Prescreening Developmental Questionnaire, (2) social competency as determined by teacher ratings, (3) type of handicapping condition, (4) number of days present in classroom, (5) prior preschool experience, (6) birth order, (7) age, and (8) sex.

Teacher characteristics: (1) Perceptions of professional competency, (2) attitudes towards mainstreaming, (3) training, and (4) prior experience teaching handicapped children.

Program characteristics: (1) Number of play areas, (2) number of barriers dividing play areas, (3) number of play units (simple, complex, multiplex, and super), (4) number of children present, (5) handicapped to nonhandicapped child ratio, and (6) teacher to child ratio.

Results

The results provided information in five areas related to the objective of this study. First, the results of this study demonstrated that handicapped children enrolled in developmentally integrated early education classes were socially, as well as physically, integrated with their nonhandicapped peers. Although the handicapped children observed were not isolated or rejected in the classes observed, the data comparing their social behaviors to those of their nonhandicapped counterparts indicated that

handicapped children had fewer interactions and were less active in social encounters than were their nonhandicapped peers. Both groups of children: (a) played more often with their nonhandicapped classmates than their handicapped classmates; (b) had more positive social encounters with their peers than negative interactions, and (c) spent more of their time either in social play or engaged with adults, and less of their time being "unoccupied" or not involved in any activity.

However, handicapped children had fewer active social interactions and initiated fewer positive social interactions with their classmates. Secondly, certain antecedent child characteristics were related to handicapped children's social interactions. These predictor variables were teachers' ratings of children's social competency and developmental levels. Handicapped children who were rated as more socially and developmentally competent by teachers also exhibited higher levels of social interactions with their peers and higher average levels of social play, as might be expected.

Differences in teacher characteristics were not predictive of levels of handicapped children's social behavior. However, teachers' attitudes towards mainstreaming and teachers' experience were related to nonhandicapped children's levels of active social interactions and average levels of play.

Certain play materials and classroom arrangements were related to handicapped children's levels of social play. In classrooms with fewer super play units, handicapped target children had higher levels of active social interactions with their peers. Handicapped target children also had higher average levels of social play in classrooms with more complex and multiplex play units and fewer physical barriers.

Finally, the program characteristics that were related to the levels of social interactions of nonhandicapped children did not have the same effects upon the levels of social interactions of handicapped children. Handicapped children's levels of social interactions were more highly related to differences in program characteristics than were the levels of social interactions of nonhandicapped children.

Discussion

The results of the present study demonstrated that it was possible to isolate constellations or sets of antecedent program characteristics that have potential for increasing the success of social integration within developmentally integrated early childhood programs. The natural variations of these program characteristics across the 58 classes were predictive, to a degree, of differences in handicapped children's levels of active social interactions and social play. Program characteris-

tics are more easily and inexpensively modified than are teacher characteristics or child characteristics. If adaptations in these physical and social contexts of developmentally integrated early childhood classes are found to promote or enhance social integration, either independently or in combination with other procedural interventions, environmental intervention strategies may represent cost-effective alternatives to direct, individual behavioral strategies.

Although the correlational nature of the relationships between antecedent characteristics and transactional child behaviors in this study precludes causal interpretations, the results did make two significant contributions to the current status of social integration research and early integration practices.

First, the demonstration of antecedent-transactional relationships has identified three critically needed areas for future research. These areas are:

1. The demonstration of functional relationships between manipulations of antecedent program characteristics and changes in children's social behavior patterns;

2. The exploration of behavior covariations among children's patterns of behaviors; and

3. The extended examination of the long-range consequences of increasing children's early social interactions.

Secondly, the antecedent-transactional relationships found in the present study offer four tentative recommendations for the organization of developmentally integrated early childhood programs:

1. Teachers should minimize the number of barriers or partitions they use to divide the classroom into play areas. Two alternative ways of creating different play areas are: to use different colored floor covering such as carpet, rugs, or tiles, or to use masking tape to outline the play area boundaries. These methods, or the use of very low partitions, allow the children to see and to move easily across the many play areas of the room.

2. Teachers may wish to set up play materials and toys which can be used by more than one child at a time during free-play or self-selected activity situations. These are complex or multiplex play units. These play units also can be created

by combining materials and toys, such as clay with cookie cutters, blocks with trucks, and so on. However, teachers probably should not combine too many materials or create super play units. In classes with many such super play units, handicapped children had lower levels of social interactions.

Some examples of complex and multiplex play units are provided in the following table:

Complex Play Units			Multiplex
Teeter Totters	Bat and ball	:	Blocks or cars with blocks
Balance beams	Bean bag toss	:	Sand table with shovels
Recorder players	Telephones	:	Water table with boats
Puppets	Lotto games	:	Workbench with hammers
Playdough	Blocks	:	Playdough with rolling pins
Lego sets	Flannel boards	:	Paper, paints, and scissors
Doll house with furniture		:	Circus wagons with animals

3. Both handicapped and nonhandicapped children appeared to engage in higher levels of social interactions in classrooms that had more children present. Although the results of this study cannot determine what would be the optimal number of children in each classroom, there are indications that programs can increase their total enrollments within the limits established by licensing requirements and available staff and space.

4. Finally, teachers and program directors can utilize free-play or self-selected activities as a time to assess how well the handicapped children are assimilated into the social activities of the classroom. If teachers observe that handicapped children are not interacting or playing with their peers as often as the nonhandicapped children, this is the time they should focus attention upon increasing the opportunities handicapped children have for social interactions and social play. A teacher can get an indication of these needs by using the levels of nonhandicapped children's social behaviors as a gauge to which they can compare the handicapped children's behaviors. Secondly, teachers must carefully monitor the behaviors of the adults, as well as the children in the classrooms. Teachers should pay attention particularly to how much attention handicapped children receive from adults. Too much adult attention tends to decrease how often young children play together. The teachers, aides, and volunteers should use their time during the free-play or self-selected activities to observe and to encourage children to play together rather than directly participating in the children's activities or engaging them in long conversations or social encounters.

Summary

The present research effort indicated the possibilities of isolating the characteristics and conditions of early childhood education and day care classes to increase the potential success of early integration efforts. The data also suggested that, although handicapped children currently enrolled in 58 early childhood classes are not socially isolated or rejected, there are quantitative differences in their levels of social behaviors that differentiate them from their nonhandicapped classmates. Areas of future research and field-initiated evaluations of environmental strategies to increase young handicapped children's levels of social behaviors were presented. In addition, four tentative suggestions for the cautious application of these environmental strategies were provided.

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CHAPTER I

INTRODUCTION

Need for Proposed Research

There are two long-range objectives for increasing the social interaction among handicapped children, nonhandicapped children, and teachers within integrated early childhood education settings. The first goal is the prevention of secondary or additional educational, social, and emotional disabilities that result from stigmatizing, rejecting, and isolating handicapped children (Bijou, 1966; Hobbs, 1975; Wolfensberger, 1972). The second goal is the preparation of the handicapped child for future placements in the regular classrooms in public schools (Hayden, 1974; Klein & Randolph, 1974) and, eventually, community social life (Hayden, 1974; Wolfensberger, 1972).

The achievement of these goals is dependent upon the ability of the integrated early education programs to promote and maintain positive social interaction among the children and teachers in the integrated setting. If these settings should fail to achieve the social integration, as well as physical integration, of handicapped children, it is possible that integrated early education settings may have detrimental effects upon both handicapped and nonhandicapped children.

The little information available on preschool mainstreaming efforts has shown that merely bringing handicapped and nonhandicapped children together in the same classroom will not automatically achieve the social goals of integration (Cooke, Apolloni, & Cooke, 1977; Devonney, Guralnick, & Rubin, 1974; Ensher, Blatt, & Winschel, 1977; Karnes, Lee, & Yoshioka-Maxwell, 1978; Ray, 1975; Snyder, Apolloni, & Cooke, 1977).

It is, therefore, necessary to identify the critical factors and conditions that will promote complete social integration of preschool handicapped children.

The need for this information is intensified by recent social and legislative pressures to mainstream young handicapped children into preschool programs (e.g., P.L. 92-424 Economic Opportunity Act Amendments, 1972; P.L. 94-142 The Education of Handicapped Children Act, 1977) and is particularly critical in rural areas where children with handicapping conditions are widely dispersed, specialists are rare, and mainstreaming is likely to be the most cost-effective method for meeting the legal and social imperatives for providing handicapped children entry into the educational system in the least restrictive way (Peters, Laub, Neisworth, Kurtz, & Wilder, 1975).

Rationale for the Study

With the great variability that exists among developmentally integrated classrooms and among young children, it is impossible to identify one variable responsible for the success or failure of a mainstreaming effort. The promotion of social integration represents a complex and dynamic interrelationship between the many characteristics of the children present, the teachers, and the program. Needed is an effort to provide both an assessment of the social integration of young handicapped children in existing, typical early education settings and an analysis of those characteristics of the program context that are associated with the success or failure of such mainstreaming efforts. In other words, an analysis is required of those antecedent conditions (preconditions) that may directly or indirectly relate to the success

or failure of social integration. Such preconditions include variables within three cluster groups:

1. Child variables--including the child's age, developmental level, social competency, type of handicapping condition, family background, prior preschool experience, and sex.

2. Teacher characteristics--including education and training, attitudes towards mainstreaming, and perceived teaching competency.

3. Classroom characteristics--including the number of children present, the ratio of handicapped to nonhandicapped children, the adult/child ratio, the types of materials and equipment present, and the like.

Each cluster of variables (and each variable within each cluster) may contribute to the success of social integration. Yet, little is known about the distribution of such variables within early childhood education settings, and the relative contribution each makes to the success of social integration.

Such information is required if successful planning and program development is to occur.

Further, the three clusters of variables (and the variables within clusters) are not all equally subject to intervention. Peters and Willis (1978), for example, have suggested that it is possible to project a "Modifiability Index" when moving from theory and research to daily early education practice. Some research variables may be predictive of the outcomes of early intervention without being themselves subject to manipulation and intervention (e.g., child's sex, child's birth order or ordinal position in the family, the nature of the child's handicap).

Other variables may be somewhat less predictive, but are much more subject to intervention (e.g., the number of children enrolled, the number of play areas in the classroom, and the nature of the materials or equipment available in the early childhood education setting). It is clear that, for program planning purposes, there are certain efficiency considerations that need to incorporate both the relative contribution of a variable (or set of variables) and the ease and acceptability of intervention. In terms of the three clusters of variables listed above, the order of ease of intervention (from most to least) runs: program, teacher, and child characteristics.

In the past, social integration has been evaluated as a uniform independent variable. That is, research efforts have simply or principally looked at mainstreaming as the physical "mixing" of handicapped and nonhandicapped children. Little effort has gone into identifying and isolating the relative contributions of child, teacher, and program as they occur as a constellation of conditions. Further, few attempts have been made to look at the nature of the social interactions (i.e., in terms of quality and quantity) that actually occur in mainstreamed education settings. This study sought to make such an analysis.

For purposes of this study, social integration is defined as the degree of similarity in the patterns and levels of eight positive social interaction and play behaviors of selected handicapped and nonhandicapped children in 58 early childhood classes.

The following chapter presents the review of literature and research. Included in this review are the rationale for integration of

young handicapped children and the examination of the interrelationships between antecedent characteristics (i.e., program and child characteristics) and children's social behaviors in early childhood classes. This review provides the framework from which the selection of variables and research methods for the present investigation were developed.

CHAPTER II

REVIEW OF THE LITERATURE

The review of literature is divided into four main parts. The first section discusses the concept of social integration, a rationale for initiating these efforts in early childhood education programs, and the goals of these mainstreaming efforts. The second section reviews integration efforts in early childhood education settings. The third section presents a discussion of two aspects of interaction in the development of all young children. The second aspect reviews program factors and child characteristics influencing the frequency and level of social interaction in early childhood education classrooms. The final section presents a brief discussion of the limitations of the past evaluations of mainstreaming efforts. This section concludes with implications for this study and future research.

Developmental Integration in Educational Settings

Social Integration

Wolfensberger (1972) has differentiated two types of integration: physical and social. Physical integration is the inclusion or physical presence of handicapped children in the classroom. Social integration involves the active social interaction and social acceptance for handicapped children. Ultimately, social integration is the only meaningful form of integration which leads to the attainment of mainstreaming goals (Wolfensberger, 1972, p.48). Although physical integration is a necessary precondition of social integration, it alone is not sufficient to guarantee social integration.

The physical integration of handicapped children into classrooms and schools has not resulted in significant increases in social interaction with nonhandicapped peers (Cooke et al., 1977; Devonney et al., 1974; Ensher et al., 1977; Karnes, Teska, & Hodgins, 1970; Ray, 1974; Porter, Ramsey, Tremblay, Iaccobo, & Crawley, 1978; Snyder et al., 1977), increased social status or peer acceptance (Baldwin, 1958; Goodman, Gottlieb, & Harrison, 1972; Gottlieb & Budoff, 1973; Johnson, 1950), or more favorable teacher's attitudes (Gottlieb, 1975b; Shotel, Iano, & McGettigan, 1972). The familiarity and contact with handicapped children brought about by physical integration may actually contribute to increased peer rejection (Ensher et al., 1977; Goodman et al., 1972; Gottlieb & Budoff, 1973) and negative changes in teachers' attitudes towards mainstreaming (Shotel et al., 1972).

Speculations as to the reasons for the failures to achieve social integration are numerous and varied. However, the central issues are clear: (a) What critical transactions must take place within the integrated class or setting that lead to social integration of handicapped children? (b) Are there characteristics of the settings and the children that are common to successful integration efforts?

In a review spanning twenty years of research on the social acceptance of physically handicapped children, Jordan (1968) identified four factors critical to the success of social integration. These were: (a) the nature of the social contact, (b) the situational context of the social contact, (c) the contributions of the handicapped children, and (d) the environment into which the handicapped child was physically integrated.

Jordan concluded that each of the four factors must be considered separately and interactively to determine the success an individual handicapped child will have in an integrated setting. The following sections provide a few illustrations of how each of these factors have been approached empirically and demonstrated to have an effect on handicapped children's social interaction.

The nature of the social contact. In general, it has been hypothesized that pleasant and more rewarding social interactions or experiences with the handicapped child will increase the handicapped child's social status, acceptance, and the number of positive social contacts the child receives from peers and classmates. A series of studies on the nature of social interactions among normally developing preschool children (Charlesworth & Hartup, 1967; Hartup, 1978; Hartup & Coates, 1967; Hartup, Glaszer, & Charlesworth, 1967) has demonstrated the relationships between the child's ability to provide reinforcement to peers and the amounts of reinforcement and the social acceptance the child received in return. Children who emitted more positive reinforcement during social interactions with peers tended not only to receive more positive reinforcement (usually in the form of continued social interactions), but also received higher social status in their classrooms. Conversely, preschool children who emitted more negative reinforcement during social interactions with their peers tended to receive more negative reinforcement and also lower social status in their classrooms.

To date, there have been no similar assessments of the preschool handicapped children's levels of contingent reinforcement to their nonhandicapped peers during naturally occurring social interactions.

However, handicapped children's behavioral repertoires were found deficient in those behaviors most frequently defined as positive reinforcement (Cooke & Apolloni, 1976; Strain & Timm, 1974).

The reinforcement or pleasant consequences for the social contact, however, need not come directly from the handicapped child. Nonhandicapped children's positive social interactions and contacts with a handicapped child were increased when systematically reinforced by the teacher (Strain & Timm, 1974).

Although the effects of positive contact with handicapped children upon teachers' behaviors have not been studied directly, the results from attitudinal research confirm the same relationship. Harasymiw and Horne (1975) showed that teachers' attitudes both towards mainstreaming and handicapped children increased favorably when they felt they had successfully taught a year in an integrated class. On the other hand, teachers who felt they had been unsuccessful showed significantly more negative attitudes towards mainstreaming and their own professional capabilities (Shotel et al., 1972).

The situational context of the social contact. In comparisons of effects of integration in classroom and play group situations, Gottlieb (1975b) and Jordan (1968) concluded that the voluntary, less demanding constraints of social contact within the context of the informal play group led to more favorable peer attitudes towards mentally retarded children than did the classroom context. In both studies, an alternative explanation may be that the traditional elementary school classrooms offered fewer opportunities for positive social contacts among the children than did the play-group context.

The contributions of the handicapped child. Various researchers have suggested that the handicapped child's social acceptance and social interactions are impaired by his inappropriate and/or antisocial behaviors (Baldwin, 1958; Johnson, 1950) or his limited repertoire of social behaviors (Cooke & Apolloni, 1976; Snyder et al., 1977; Strain & Shores, 1977; Strain & Timm, 1974).

In a correlational study of the effects of inappropriate behaviors on peer sociometric ratings, Bonney and Powell (1953) showed that children's highly visible inappropriate behaviors were negatively correlated with their social acceptance. Obtrusive inappropriate behaviors that were not directed at any child were even more detrimental to social status than were aggressive behaviors. Furthermore, these inappropriate behaviors were tolerated even less by peers when the child was labeled as handicapped (Gottlieb, 1975a).

Very little is known about the behavior patterns of handicapped children in integrated early education settings. However, the few existing observational studies of preschool classrooms have failed to find higher rates of aggressive or antisocial behaviors for handicapped children (Karnes et al., 1978; Peterson & Haralick, 1977; Porter et al., 1978).

In addition to the behavioral contributions, the nature and severity of the child's handicapping condition may influence his social contacts. The stimulus properties of the handicapped child's physical appearance, behavior, and patterns of movement may identify the child as atypical (Gottlieb, 1975a) and act as deterrents to social interaction

(Bijou, 1966; Neisworth, Smith & Jones, 1977). The number of social contacts and the level of peer acceptance of handicapped children have been found to decrease as the visibility (Bruininks & Kennedy, 1974; Force, 1956; Levitt & Cohen, 1976) and the severity (Ensher et al., 1977; Syracuse University, 1974) of the child's handicapping condition increased.

The environmental setting of integration. Very limited information exists on the environmental influences on social integration. Few studies have attempted to identify the relationships between existing program or classroom features and the degree of social interaction or levels of social integration achieved in those settings.

The few existing studies have focused mainly upon factors in the social environment--principally, teachers' attitudes. This research overwhelmingly concludes that social integration is dependent upon the classroom teacher's positive attitude towards integration (Ensher et al., 1977; Haring, Stern, & Cruikshank, 1958; Syracuse University, 1974; Wynne, Ulfelder, & Dakof, 1975).

Only one study has attempted to investigate the impact of the physical environment upon the success of developmental integration. This was a study of the effects of physical classroom design on the peer sociometric ratings of handicapped children (Gottlieb & Budoff, 1973).

Although the mentally retarded children in an architecturally, open-designed school were more frequently known, they were also more frequently rejected by nonhandicapped children than handicapped children integrated into traditionally designed classrooms.

The preceding four sections illustrate how complex the patterns of factors might be which influence the outcome of integration. The achievement of social integration represents a multidimensional concern. Within this framework, the influences of the characteristics of the child, the environment, and the social contacts that take place must all be addressed.

Early Integration Rationale

The current educational, social, and legislative pressures to implement large-scale mainstreaming efforts are based more upon the failure of developmentally segregated programs to demonstrate any significant educational and/or social advantages than on the strengths of integrated programs (Deno, 1973; MacMillan, 1971). The issue of the relative merits of segregated versus integrated placements for handicapped children, however, may no longer be a relevant issue in light of two recent legislative actions. The precedence and priority for integration of handicapped children in early childhood programs have been established firmly by P.L. 92-424, The Economic Opportunity Act Amendments, 1972; and P.L. 94-142, The Education of Handicapped Children Act, 1977.

Beyond the legislative imperatives, developmental integration in early childhood education classes has been endorsed because the nature and characteristics of these programs and the children they serve allow for the accommodation of a wider range of children's individual differences than do regular education classes in the public schools. These program and child characteristics may optimize the potential for success of integration efforts initiated during the preschool years:

1. Early childhood education programs tend to serve more heterogeneous groups of children, in terms of chronological age and developmental capabilities, than do public schools (Hayden, 1974; Wolfensberger, 1972).

2. Early education programs tend to have smaller classes and lower adult-child ratios than public school classes (Fein & Clarke-Stewart, 1973; Hayden, 1974; Wolfensberger, 1972).

3. Early childhood programs place more emphasis on comprehensive and individualized instruction (Hayden, 1974; Neisworth & Madle, 1975; Wolfensberger, 1972).

4. Younger children show less discrimination and fewer negative attitudes towards handicapped children than school-age children (Levitt & Cohen, 1976).

5. Early childhood educators place high priority upon positive social interaction in the classroom and the development of social competencies (Fein & Clarke-Stewart, 1973; Landreth, Gardner, Eckhardt, & Prugh, 1943; Peters & Marcus, 1973).

6. Massive intervention efforts to remediate or to prevent the additional disability are most effective when implemented before the age of six years and continued through school age (Bronfenbrenner, 1974; Caldwell, 1970; Kirk, 1964).

Early Integration Goals

There are two long-range objectives for increasing the social interaction among handicapped children, nonhandicapped children, and teachers in integrated early education settings. The first goal is the prevention of secondary or additional educational, social, and emotional

disabilities that result from stigmatizing, rejecting, and isolating handicapped children (Bijou, 1966; Childs, 1975; Wolfensberger, 1972). The second goal is the preparation of the handicapped child for future placements in the regular classrooms in public school (Hayden, 1974; Klein & Randolph, 1974) and, eventually, community social life (Hayden, 1974; Wolfensberger, 1972). The achievement of these goals is dependent upon the ability of the integrated early education programs to promote and maintain social integration among the children and teachers in the integrated setting. If these settings should fail to achieve the social integration, as well as physical integration, of handicapped children, it is possible that integrated early education settings may have detrimental effects upon both handicapped and nonhandicapped children.

In a review of literature on developmentally integrated early education programs, three potential social advantages of integrated settings have been proposed. These were:

1. Handicapped children may acquire new and higher levels of social skills and play behaviors through observation and imitation of the age-appropriate behaviors of their nonhandicapped classmates (Apolloni & Cooke, 1978; Bricker & Bricker, 1977; Peterson, Peterson, & Scrivens, 1977).

2. Handicapped children may acquire higher levels of social competency and social acceptance through social interaction with nonhandicapped peers (Devonney et al., 1974; Peterson & Haralick, 1977; Snyder et al., 1977).

3. Nonhandicapped children and teachers may acquire a broader understanding and greater acceptance of individual differences and limitations through social interactions with handicapped children.

Listed among the fears and objections to mainstreaming efforts are four negative outcomes that potentially could result from the integration of handicapped children and nonhandicapped children. These are:

1. Handicapped children may be socially rejected or ignored by their nonhandicapped classmates and teachers (Gottlieb, 1975b; Snyder et al., 1977; Wynne et al., 1975).

2. Handicapped children may disrupt the class activities with their inappropriate behavior patterns (Gottlieb, 1975a).

3. Handicapped children may detract from the educational programming by placing increased demands upon the teachers' time (Porter et al., 1978).

4. Nonhandicapped children may acquire inappropriate behaviors through the observation and imitation of their handicapped classmates (Cooke et al., 1977; Peterson et al., 1977).

At the present, there exists little clear evidence to support or document either the socially beneficial or detrimental outcomes of attempts to integrate handicapped and nonhandicapped children in early educational settings. However, it is clear that research and evaluations of the impact of mainstreaming must focus upon the process and outcomes of integration. The following section will review the research literature evaluating the impact of mainstreaming upon the teachers and children in integrated early childhood class settings.

Mainstreaming Evaluation in Early Childhood Programs

The practice of mainstreaming--integrating handicapped and nonhandicapped children into the same classroom environments--is becoming increasingly widespread in early education programs of various kinds (Wynne et al., 1975) and public school settings at all grade levels (Deno, 1973). However, much of the debate surrounding the efficacy of integration efforts is based still upon the speculation of the potential outcomes of these practices rather than systematic evaluation or empirical research. Very little is known about the outcomes or impact of mainstreaming on different children, different age groups, and different settings. Even less information is available on the process variables, the classroom transactions, and interpersonal interactions which take place within the integrated classroom (Gottlieb, 1975b).

This review of the research on early education efforts to mainstream will be organized around the four factors discussed previously as influencing the social contacts and acceptance of handicapped children. These are: (a) the nature of the social contact, (b) the situational context of social contact, (c) the contributions of the child, and (d) the environmental setting of integration.

Nature of Social Contacts

Clearly, the physical inclusion of handicapped children in an integrated classroom will not ensure positive social interactions with nonhandicapped children or peer acceptance. There is very little cross-group interaction between normally developing children and children who are identified as mentally retarded (Porter et al., 1978; Ray, 1975), behaviorally disordered (Allen, Benning, & Drummond, 1972; Strain

& Timm, 1974), economically disadvantaged (Karnes et al., 1970), or developmentally delayed (Devonney et al., 1974; Karnes et al., 1978). Only one observational study of social interaction and behaviors of young children in integrated early education programs has failed to replicate this pattern (Peterson & Haralick, 1977).

In a naturalistic study of social interaction and play behaviors in an integrated, experimental preschool, Peterson and Haralick (1977) did not find that children with handicapping conditions, ranging from mild to severe, were rejected more frequently or received fewer positive social contacts than their nonhandicapped peers. However, even in this study, nonhandicapped children showed a slight preference for other nonhandicapped children as playmates and engaged in higher levels of social play when in activities with other nonhandicapped children. The nonhandicapped children's cooperative play occurred three times more frequently when at least one other nonhandicapped child was available as a playmate. When only handicapped children were available as play partners, nonhandicapped children engaged in isolate play 62% of the time. The rates of playmate selection and levels of play were not reported for handicapped children.

One possible reason for the discrepancy in Peterson and Haralick's results, as compared to other studies, may be the difference in the ratio of handicapped to nonhandicapped children in their study and the studies listed above. In this study, the class ratio was 3:1 (i.e., the result of the reverse mainstreaming of nonhandicapped children into a preschool class for handicapped chileren) as opposed to a 1:1 ratio (Devonney et al., 1974; Karnes et al., 1978; Ray, 1974). The smaller

number of other nonhandicapped playmates available may have increased the probability that the nonhandicapped children would interact with a handicapped child. This result may question the efficacy of the practice of integrating a few handicapped children into a large group of nonhandicapped children (Cooke et al., 1977; Guralnick, 1976; Korn, 1974; Northcott, 1970).

Summarizing the studies listed above, it appears that generally nonhandicapped preschool children interact primarily with other nonhandicapped children and only minimally with handicapped children during free play situations. Handicapped children, however, show no discernable interaction preference for either handicapped or nonhandicapped children (Karnes et al., 1978; Porter et al., 1978).

In comparisons of the patterns of social and play behaviors of handicapped and nonhandicapped children, the following conclusions are drawn:

1. Nonhandicapped children showed higher levels of social play than handicapped children (Devonney et al., 1974; Peterson & Haralick, 1977).

2. Both handicapped and nonhandicapped children generally showed low rates of negative social behavior (Porter et al., 1978).

3. Handicapped children and nonhandicapped children showed no differences in the frequencies of their interactions with the teacher (Porter et al., 1978).

Situational Context of Interaction

There have been no direct studies of the contextual variables, such as child-teacher ratio, class size, or age groupings, that may

influence the social contacts and acceptance of handicapped children (Guralnick, 1976). Indirect support for the importance of such variables was indicated in the previous discussion of the ratio of handicapped children to nonhandicapped children. There is a critical need to develop research in this area (Bricker, 1978; Guralnick, 1976; Wynne et al., 1975).

Contributions of the Child

Three contributions of the handicapped child to social interaction are reviewed. These contributions are the nature of the child's handicapping condition, the appropriateness of his/her social behaviors, and the level of his/her social competency. As the level of severity or visibility of the child's handicapping condition increased, the frequency and positive quality of the child's social contacts decreased (Bruininks & Kennedy, 1974; Ensher et al., 1977; Force 1956; Syracuse University, 1974). Secondly, as the frequency of the handicapped child's aggressive or antisocial behavior increased, the number of positive social contacts decreased (Baldwin, 1958; Gottlieb, 1975a; Johnson, 1950). Finally, as the child's level of social competency decreased, the number of social contacts decreased (Devonney et al., 1974; Strain & Shores, 1977; Strain & Timm, 1974).

Environmental Setting of Integration

The social environment. Surveys of early childhood educators have revealed their attitudes toward mainstreaming of mildly and moderately impaired children to be generally favorable (Abelson, 1976; Clark, 1976; Ensher et al., 1977; Syracuse University, 1974). However,

with the integration of more severely impaired children, teachers' attitudes and perceptions of their own competencies were less favorable (Ensher et al., 1977; Syracuse University, 1974).

In an evaluation of Head Start's efforts to mainstream preschool classrooms, teachers' positive attitudes toward integration were significantly correlated to measures of program quality as measured by ratings of educational plans. Teachers' perceptions of their professional competencies with mildly and moderately handicapped children were positively correlated with general indices of integration (i.e., handicapped children's levels of interactions) and attention to the physical and psychological environment (i.e., ratings of room arrangement and materials). Teachers who had more favorable attitudes toward mainstreaming and who felt more confident in their abilities to teach handicapped children tended to report having greater success in socially integrating their classrooms. These results confirmed the findings of studies discussed previously in this chapter (i.e., Harasymiw & Horne, 1975; Shotel et al., 1972).

Finally, the social context of the peer group in early childhood classes appeared to affect integration favorably. Younger children showed less discrimination and fewer negative social contacts towards handicapped children than did school-age children (Levitt & Cohen, 1976).

The physical environment. There is currently no research on the influence of the physical environment of early childhood education classrooms upon social integration of handicapped children. Although the physical space and the play materials and equipment provided in the classroom have been shown to have significant effect upon the social

behaviors of young nonhandicapped children, this area of research generally has been neglected for handicapped children. The studies of the effects of the physical environment on the social and play behaviors of nonhandicapped children will be reviewed in a later section of this chapter.

Summary of Evaluation

In this section the evaluations of mainstreaming efforts in early childhood settings were reviewed. The complex patterns of antecedent program and child characteristics affecting the successful outcomes of these mainstreaming efforts revealed the need for a clearer understanding of the contextual variables of integrated early childhood education settings. The studies reviewed have shown repeatedly that the physical integration of handicapped preschool children alone is not sufficient to achieve the goals of integration. Therefore, it is necessary to begin identifying critical variables and developing strategies that can be applied by researchers and practitioners to promote social integration in early childhood education classrooms. The achievement of the goals of social integration will depend upon the ability of the early childhood programs to increase and maintain the positive social interactions among the handicapped children, the nonhandicapped children, and the teachers in the classrooms.

Social Interaction in Early Childhood

Importance of Early Social Behavior

The previous discussion emphasized the importance of positive social contacts and interactions for the acceptance and full integration

of handicapped children. This section emphasizes the importance of social interaction and social play to the development of all young children. Although various approaches and theories have been formulated to study the functional, symbolic, and cognitive aspects of children's play (Brunner, Jolly, & Sylva, 1976; Fein & Clarke-Stewart, 1973; Rubin, 1977), this discussion will be limited to the social functions and interpersonal aspects of play behaviors.

Social interaction or interpersonal behaviors are the major means and context through which children learn social and intellectual skills (Bijou, 1966; Piaget & Inhelder, 1969; Smilansky, 1968; Strain & Timm, 1974). Through interpersonal social transactions, the child is provided with relevant discriminative cues and reinforcing stimuli which shape his/her behavioral repertoire. If the provision of these social stimuli are restricted, withheld, or provided for inappropriate behaviors, the child will lack the opportunities to develop essential behaviors and critical skills (Bijou, 1966). Longitudinal studies of the importance of early social behaviors have demonstrated that the frequency and quality of early peer interactions are correlated positively to levels of later adult social adjustment (Roff, 1960, 1961; Roff, Sells, & Golden, 1972).

The early formation of social relationships and the development of social skills are two of the major rationales for early childhood education programs. Among the goals of teachers (Landreth et al., 1943; Read, 1976), day-care operators (Peters, & Marcus, 1973), and parents (Fein & Clarke-Stewart, 1973), the social goals for positive social interaction with teacher and peers received high priority. The

importance of these goals has led researchers and practitioners in child development and early childhood education to focus upon the program and child characteristics which influence the social behaviors of young children.

Factors Influencing Social Behavior

There have been many attempts to identify the factors or conditions which influence the frequency and levels of children's social behavior in early education programs. The following section reviews the child development and early childhood education literature on the program factors and the characteristics of the children that affect patterns of social interaction. The program factors included are the teacher, the organization of the physical space, and play materials and equipment. The child characteristics included are: age, birth order, developmental level, social competency, and the child's handicapping condition.

Program factors. The classroom teacher is a critical element in any early childhood education program. The teacher's impact upon social interaction in the classroom may be through direct actions (Allen, Hart, Buell, Harris, & Wolf, 1964; Cooke et al., 1977; Hartup, 1970; Moore, 1967; Strain & Timm, 1974) or indirect actions such as the arrangement and management of the instructional environment (Bieler, 1976; Prescott, Jones & Kritchevsky, 1967; Shure, 1963).

Teachers spend the largest proportion of their available time in interaction with children (Foster, 1930; Landreth et al., 1943). However, these social interactions are not equally distributed among the members of the class (Foster, 1930; Withall, 1956). Some of the child

characteristics that have been found to be associated with higher rates of teacher interactions are: (a) age (i.e., younger children receive more teacher-initiated interactions), (b) sex (i.e., boys receive more teacher-initiated interactions, although girls initiated more interactions with the teacher), and (c) inappropriate behavior patterns (i.e., children displaying more antisocial or disruptive behavior had higher rates of teacher interactions).

The rates of children's interactions with the teachers have been demonstrated to have a significant relationship to both the child's level of social interactions with peers (Marshall & McCandless, 1957b; Moore, 1967; Swift, 1964) and social acceptance among peers and teachers (Hartup, 1970; Marshall & McCandless, 1957a; Moore, 1967). Preschool children who were highly dependent upon adults (i.e., as defined as the number of social interactions initiated towards an adult during free play) were rated as less popular by teachers and peers and received few social interactions from peers.

It appears that the behavior of the teacher can have contradictory effects upon the peer social interaction of children in early education classes. The teacher can make interactions with children contingent upon peer interactions and thereby increase or sustain children's social behaviors with peers. However, excess levels of interactions with the teacher may work against the children's establishing and maintaining social interactions and positive status with their peers.

The effects of the teacher on children's social behaviors are also mediated through the arrangement and organization of the physical

environment of the classroom (Bieler, 1976; Prescott et al., 1967; Twardosz, Cataldo, Risley, 1974).

In a correlational study of the arrangements of physical space in day care settings, Prescott and her associates (1967) concluded that the spatial quality of day care centers was predictive of differences in teachers' behaviors and children's responses. Spatial quality was defined as the degree of organization, degree of complexity, the variety of equipment, the amount to do per child, and the special spatial or design problems of the setting. Centers rated high in spatial quality were characterized as having treachers who showed higher amounts of nonroutine encouragement and less restrictive behavior. Children in these centers tended to be more cooperative and less dependent upon the teacher.

Bieler (1976) studied the impact of the physical environment upon teacher and child behaviors by manipulating the organization of the space and the complexity of play materials. Prosocial environmental conditions were created by (a) decreasing the number of barriers between play areas, (b) creating fewer but larger play areas, (c) orienting activities towards the center of the room, and (d) providing play materials which were more complex and could be used by more than one child simultaneously. Although children's frequency of social interactions did not increase under this prosocial condition, the children were found to maintain closer proximity and play in larger groups. Bieler failed to include a qualitative rating of social play, so the question of whether larger groups of children were indicative of higher levels of social play (i.e., associative and cooperative play) remains open. In summary, fewer

partitions and larger play areas may result in increased social interaction and social play among young children.

Since the preschool child spends 50% of his/her time playing or involved with toys, materials, and equipment (Van Alstyne, 1932), these play materials are a major concern and financial investment for early education programs. The types, amounts, and variety of play materials influence the frequency and levels of social behavior (Kritchevsky, Prescott, & Walling, 1973; Prescott et al., 1967; Rubin & Seibel, 1979).

The studies of the social value of particular toys and materials have used various criteria to classify the types of play equipment. Several scales of social value have been used. These included: (a) the number of children using the material at one time (Hulson, 1930), (b) the number of children for whom the toy was designed (Quilitch & Risley, 1973), (c) the amount of conversation and cooperation among the children using the material (Van Alstyne, 1932), (d) the complexity of play behavior observed while the children used the material (Rubin, 1977), and (e) the number of children who could use the equipment and the capacity of the materials to maintain children's interest (Kritchevsky et al., 1973; Prescott et al., 1967).

Summarizing the results of these studies and additional research, it appears that:

1. Toys and materials that were designed to be used by two or more children increased social interaction among children (Hulson, 1930; Murphy, 1937; Quilitch & Risley, 1973).

2. Materials that could be used in more than one way or were relatively more complex were associated with increases in social

interaction and social interactions and undesirable behaviors (Johnson, 1935; Rohe & Patterson, 1974).

In summary, there is mounting evidence to support the relationships of the program factors and the children's social behaviors in early childhood classes. Increases in levels of peer interactions and social acceptance of young children may be influenced by such factors as the teacher's behavior, the classroom arrangement, and the play materials within the classroom. Previously, these factors have been studied in isolation and the interactive effects among these program characteristics and their relationships to characteristics of the children in these settings have remained unstudied.

Child characteristics. Recently much debate has surfaced among child development researchers over the nature of child-characteristic variables such as chronological age, birth order, and developmental levels (Gewirtz, 1971; Nordquist, 1978; Risley & Baer, 1973). In earlier child development research, the age-correlated changes in the quantity and quality of children's social interaction were attributed to maturation (Anderson, 1939; Swift, 1964). However, arguments have been set forth that variables such as age, birth order, and developmental levels are merely residual variables. Residual variables, unlike causal variables, represent ". . . an index of occasions and limits for the process of environmental impact on child behavior . . ." (Gewirtz, 1971, p.112).

This investigation will take the latter view of child-characteristic variables whereby these variables are not responsible for the changes in peer interactions; but rather are indicators of types and

amounts of experiences present in the child's natural environment. Since practitioners cannot manipulate child-characteristic variables as easily as program characteristics, this set of antecedent characteristics may represent the conditional limitations of intervention programs. The correlational relationships among the child characteristics and levels of social behaviors are summarized below.

The frequency of peer social interactions (Ralph, Thomas, Chess, & Korn, 1968; Swift, 1964), levels of social play (Parten, 1932; Rubin, 1977), and the number of other children in the play groups (Challman, 1932) all increase as the child grows older. Accompanying these age-correlated changes is an increase in the amount of social reinforcement the children dispense towards peers (Charlesworth & Hartup, 1967). Higher rates of social interaction were also found among children with previous preschool experiences (Ralph et al., 1968) and later birth order (Swift, 1964).

The characteristics of the child's developmental status, social competency, and handicapping conditions were discussed in an earlier section of this chapter; therefore, these points will only be summarized here:

1. Handicapped children and younger children may not have the social repertoires or skills necessary to initiate or maintain high levels of social interaction (Bijou, 1966; Cooke & Apolloni, 1976; Strain & Timm, 1974).

2. The more severe and visible the child's handicapping condition, the fewer positive contacts (s)he receives from peers (Ensher et al., 1977).

3. Handicapped children show lower levels of social play (i.e., more isolate and parallel play) than nonhandicapped children (Devonney et al., 1974; Peterson & Haralick, 1977).

Summary

It is evident that social integration of handicapped children in early childhood education programs represents a complex process with multiple outcomes. The numerous program factors and child characteristics which may affect the frequency and levels of social behavior further magnify the complexity.

Many of the investigators cited throughout this review have treated integration as a uniform variable for all handicapped children. It is clear that each child and each classroom represent a unique constellation of program factors, child characteristics, and social transactions. Therefore, every child will experience integration in a unique way.

In the past, research and evaluations of integrated classrooms also focused only on the consequences and outcomes of physical integration. The results of these studies, however, have limited generalization to different children, age groups, handicapped populations, or integrated settings for two reasons. First, little information is given about the characteristics of the handicapped children or the social and physical environment of the integrated classrooms. The independent variables of children's handicapping conditions and integrated classrooms both are treated as if they were homogeneous for all children. Neither handicapping condition nor program represent a single variable. Rather, they represent a multidimensional constellation of antecedent characteristics. Secondly, past research efforts have not fully identified or described

the transactional or process variables in integrated classes. The number of people, the number of play areas, and the number of different play materials the child contacts during the course of the program can more fully describe the individual patterns of integration experience.

The present investigation was a correlational study of the antecedent program and child characteristics and the transactional social behaviors in early education classrooms. The purposes of this study were: (a) to describe the nature and patterns of social interaction of handicapped and nonhandicapped children in integrated preschool classes, and (b) to examine the relationship between antecedent program and child characteristics and the patterns of social interaction.

CHAPTER III

THE PROBLEM

The present investigation was a naturalistic study of the conditions related to social interaction of handicapped and nonhandicapped children in 58 developmentally integrated early childhood education and day care classrooms. The major objectives of this study were to: (a) describe and compare the social interaction patterns of handicapped and nonhandicapped children in integrated classrooms; (b) identify program and teacher characteristics which were related to these patterns of social interaction; (c) identify child characteristics which are related to these patterns of social interaction; and (d) determine if certain program and teacher characteristics differentially relate to the social interactions of handicapped and nonhandicapped children.

The matrix in Table 1 defines and describes the conceptual relationships between the antecedent conditions (i.e., independent or predictor variables) and the transactional child-behavior variables (i.e., dependent variables) that were under investigation.

The specific research questions were divided into two groups: transactional hypotheses and antecedent questions. Transactional hypotheses dealt with the descriptions and comparisons of the patterns of social interaction and play behaviors of handicapped and nonhandicapped children. These transactional hypotheses were derived from the first objective. The antecedent questions were generated to examine the relationship between the antecedent program and child characteristics and the measures of transactional child behaviors (i.e., social

Table 1

Relationships Among Independent and Dependent Variables

Independent Variables	Dependent Variables
Teacher Characteristics	
Perceptions of professional competency	
Attitudes towards mainstreaming	
Training and experience teaching handicapped children	
Program Characteristics	**Child-Child Interactions**
Classroom space and organization	Total number of interactions with other children
Number of play areas	Number of active social interactions*
Number of barriers separating areas	Number of passive social interactions
Classroom materials and equipment	Frequency of interactions initiated*
Number of play units	Frequency of interactions received*
Variety of play units	Number of positive interactions with handicapped children*
Level of play units	Number of positive interactions with nonhandicapped children*
Social context of classroom	Number of positive interactions with mixed groups of children*
Number of children present	Number of negative social interactions
Ratio of handicapped to nonhandicapped	Average level of social play*
Ratio of adults to children	Number of children in social play groups*
Types of disabilities	

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Table 1 (continued)

Independent Variables	Dependent Variables
Child Characteristics	Child-Teacher Interactions
Developmental level	Number of interactions initiated towards teacher
Social competency	Number of interactions received from teacher
Type of handicapping condition	
Number of days present in classroom	
Prior preschool experience	
Number of siblings	
Birth order	
Chronological age	
Sex	

Note: * Designates indices of social integration

interaction and social play). These antecedent questions were derived from the second, third, and fourth objectives listed above.

Transactional Hypotheses

Since, for the purposes of this study, social integration is defined as no differences in patterns of social behavior between handicapped and nonhandicapped children, the hypotheses are stated in null form.

Child-child Interactions

Hypothesis 1. There will be no difference between the numbers of intervals handicapped children and nonhandicapped children engage in active social interactions with their peers.

Hypothesis 2. There will be no difference between the numbers of intervals handicapped children and nonhandicapped children spend in passive social interactions.

Hypothesis 3. There will be no difference between the numbers of intervals in which handicapped children and nonhandicapped children initiate social interactions with other children.

Hypothesis 4. There will be no difference between the numbers of intervals in which handicapped children and nonhandicapped children receive social interactions from their peers.

Hypothesis 5. There will be no difference among the numbers of intervals nonhandicapped children interact with handicapped peers, nonhandicapped peers, and mixed groups of handicapped and peers.

Hypothesis 6. There will be no difference among the numbers of intervals handicapped children interact with handicapped peers, nonhandicapped peers, and mixed groups of handicapped and nonhandicapped peers.

Hypothesis 7. There will be no difference between the numbers of intervals in which handicapped children and nonhandicapped children have positive interactions with their peers.

Hypothesis 8. There will be no difference between the numbers of intervals in which handicapped children and nonhandicapped children have negative social interactions with their peers.

Hypothesis 9. There will be no difference between the handicapped children's and the nonhandicapped children's levels of social play.

Hypothesis 10. There will be no difference between the sizes (i.e., numbers of children) of play groups of handicapped children and of nonhandicapped children.

Child-adult Interactions

Hypothesis 11. There will be no difference between the numbers of intervals in which handicapped children and nonhandicapped children initiate social interactions with adults.

Hypothesis 12. There will be no difference between the numbers of intervals in which handicapped children and nonhandicapped children receive social interactions from adults.

Antecedent Questions

Question 1

Are there differences in program characteristics that are correlated to levels of child social behavior within early childhood settings?

Question 2

Are there differences in child characteristics that are correlated to levels of child behavior?

Question 3

Are there differences in program and child characteristics predictive of differences in the levels of child behaviors for handicapped and nonhandicapped children?

Question 4

Are antecedent program, teacher, and child characteristics differentially related to the patterns of social behaviors of handicapped and nonhandicapped children?

Summary

This chapter presented the problem area of the present investigation through research objectives, hypotheses, and questions. The 12 transactional hypotheses were proposed in null form to compare the patterns of social interaction and play of handicapped and nonhandicapped children. The four antecedent questions were developed to identify and isolate the contextual contributions of program, teacher, and child characteristics to the social integration of handicapped children in early childhood settings.

Chapter IV presents the methods and procedures which were used to test the hypotheses and to meet the objectives outlined in this chapter. Chapters V-VII provide the presentation of results, the discussion of the major research findings, and the implications these findings have for future research and educational application.

CHAPTER IV

METHODS

Overview

This investigation was an exploratory study of the spontaneous levels of social interaction and play behaviors of 116 selected handicapped and nonhandicapped children in 58 integrated early education and day care classrooms. The dual purposes of this study were to identify and to describe the naturally occurring patterns of the characteristics of the teacher, the classroom, and the children that are related to the promotion of social interaction. Data were collected in two forms: The independent variables (i.e., antecedent teacher, classroom, and child characteristics) and dependent variables (i.e., transactional child-behaviors).

Data on antecedent teacher characteristics consisted of teachers' responses to a questionnaire. Program characteristics data were collected via analysis of the classroom arrangement and play materials, and reports of class enrollment and attendance records. The antecedent data on child characteristics were obtained from teachers' reports and ratings.

Transactional child-behavior data were collected through observations made during free-play activities. Thirty-minute observations of child behavior were made by an observer using a 20-second rotating time-sampling procedure. The observer coded and recorded the behaviors of two target children in each classroom.

The following chapter is divided into four sections. In the first section, the selection of the sample and descriptions of the classes and

children are presented. Section two describes the procedures that were utilized to collect the data. In section three the operational definitions of the independent and dependent variables are presented. In the final section an overview of the data analyses is provided.

Sample

The nature of the variables that were the focus of this study required that the unit of analysis be the classroom rather than the individual children. As such, 58 early childhood education and day care classrooms were selected from the early childhood programs in central Pennsylvania to constitute the sample for the study. Although such a sample is nonrandom, the classes, because of their number, are likely to be representative of the total population of integrated classes in central Pennsylvania. To the extent that rural, central Pennsylvania is similar to other areas in the middle eastern states, and the northern portion of the Appalacian region, the results may be generalized to those areas as well.

Sample Recruitment

With the assistance of: (a) the Office of Mental Retardation, (b) the Central Intermediate Unit, (c) the Pennsylvania Child Care Consortium, and (d) the Regional Head Start Offices of Centre-Clearfield, Jefferson-Clarion, Huntingdon, Blair, and Cambria counties, the investigator was able to identify a total of 82 classes which had been developmentally integrated and were operating in a geographic region of 150-200 mile radius of State College, Pennsylvania.

Program contact. An initial contact letter was sent to the directors of all of the 82 early childhood programs identified. This letter included: (a) a description of the study and (b) a detailed outline of the procedures to be used in collecting the data. A copy of the three contact letters and informed consent forms for teachers and children are in Appendix A. Program directors were asked to express their interest and willingness to participate by returning a postcard to the investigator.

The second program contact was initiated upon the receipt of the card expressing the program's interest in taking part in the study. This contact was again with the director. During this contact, the investigator confirmed or obtained the following information: (a) the number of integrated classes in the program serving children ages three to five years, (b) the complete addresses and current telephone numbers of each classroom, and (c) the names and addresses of the head teachers of each class. At that time, the investigator also requested the director's permission to contact the classroom teachers individually.

Teacher contact. Conducting the teacher contacts, again either by phone or by mail, the investigator fulfilled the following sequence of objectives:

1. To answer any questions the teacher may have had about the study.

2. To obtain the teacher's informed consent to participate in the study.

3. To provide an outline of the information needed before or on the day of the observation.

4. To obtain a list of the handicapped and nonhandicapped children in the class.

5. To randomly select the handicapped target child and the matched nonhandicapped target child.

6. To provide the teacher with informed consent releases to be completed by the parents of the target children prior to the observations.

7. To schedule the date and time for the class observation.

Classes

Class selection was based upon three criteria: (a) each had an enrollment of both handicapped and nonhandicapped children (roughly ages 3-5 years); (b) each had on-going group services for the children at least ten hours per week; and (c) each was willing to participate in the study and was accessible for observation.

Of the 82 classes that were identified and contacted, 58 classes met all three specified criteria. Twelve classes were not included in the sample because they currently were not serving handicapped children. Seven of the 12 remaining classes, not included in the sample, declined to participate because they were involved in a concurrent state-wide evaluation project. Only five classes of the 82 classes contacted either were not interested in participating or failed to return the postcard expressing their interest.

Table 2 presents the distribution of handicapping conditions of the handicapped children enrolled across the 58 classes and the children "targeted" for observation. The percentages of children enrolled under each classification category are comparable to the distribution of

Table 2

The Distributions of Handicapping Conditions in Three Groups of Preschool Children

Handicapping conditions	Group (Percentages)		
	Target children (N = 57[a])	Across fifty-eight classes (N = 268)	Head Start (N = 32,621)
Deaf	0.00	0.00	0.55
Hearing impaired	5.30	1.87	5.98
Blind	0.00	0.07	0.33
Visually impaired	1.70	3.78	4.40
Speech impaired	29.80	42.54	47.96
Physically impaired	14.00	13.43	8.21
Mentally retarded	8.80	7.08	5.80
Emotionally disturbed	12.30	10.82	6.04
Learning disabled	3.40	1.49	4.48
Health impaired	8.60	13.81	16.20[b]
Developmentally delayed	15.80	4.48	

[a]One handicapped child's classification was not reported.

[b]Head Start figure combines health impaired and developmentally delayed.

handicapping conditions in the national Head Start enrollment (U.S. Department of Health, Education, and Welfare, 1976). Listing the children's handicapping conditions in descending order, their relative frequencies were: Speech impaired (42.54%), developmentally delayed (13.81%), physically impaired (13.43%), emotionally disturbed (10.82%), mentally retarded (7.08%), health impaired (4.48%), visually impaired (3.78%), hearing impaired (1.87%), learning disabled (1.49%), and blind (0.07%).

Additional demographic data on class enrollment and enrollment of handicapped children for the sample classes are provided in Table 3. The mean number of children enrolled was 17.89 children, while the mean number of handicapped children was 4.25 children. Based upon these averages, the approximate average class ratio handicapped children to nonhandicapped children was one to four (1:4).

Children

Within each of the 58 sample classrooms, one handicapped child and one nonhandicapped child were selected to serve as the "target" children. Identification of handicapped children and their handicapping conditions was determined from program records and/or teacher reports. The handicapped target child was randomly selected from the total enrollment of handicapped children in the class. The nonhandicapped target child, then, was selected to match the handicapped target child on sex and approximate chronological age. In the class where there was not a nonhandicapped child of the same sex as the handicapped target child, a nonhandicapped child of the nearest chronological age was selected. A

Table 3

Demographic Data for Sample Classes

Variable	Number of classes	Percentage of classes	Mean
Total number of children enrolled			
5-10	5	8.62	
11-15	24	41.38	
16-20	15	25.86	17.89 children
21-25	6	10.34	
26-30	3	5.17	
31-35	1	1.72	
more than 35	4	6.90	
Number of handicapped children enrolled			
1-2	20	34.48	
3-4	15	25.86	
5-6	14	24.14	4.25 children
7-8	5	8.62	
9-10	1	1.72	
11-12	1	1.72	
13-14	1	1.72	
15 or more	1	1.72	

total of 116 children (58 handicapped children and 58 nonhandicapped children) were selected to serve as "target" children.

The similarities of the handicapped and nonhandicapped groups of children are shown in several measures. The mean chronological ages of the handicapped and nonhandicapped groups were 53.2 months and 53.6 months, respectively. The distribution of boys and girls in the two groups was also very similar. In the handicapped group there were 43 boys and 15 girls; while in the nonhandicapped group there were 44 boys and 14 girls. These similarities in the child characteristics of age and sex demonstrate that the matching on these variables was achieved. The two groups of children were also similar on the variables of birth order, class attendance, and preschool experience. The means and distributions of these variables are provided in Appendix B.

It was essential to establish that the sampling procedure used to select the handicapped group did not unduly bias or restrict this subsample. This check on the potential external validity was made by comparing the distribution of the handicapped children's handicapping conditions to two available estimates of the distribution of handicapping conditions in the preschool population. These estimates were: the distributions of handicapping conditions across all the handicapped children enrolled in the 58 sample classes and the 1976 national Head Start enrollment figures (U.S. Department of Health, Education, and Welfare, 1976). These distributions are compared in Table 2.

The similarities of the three distributions suggest that results of this investigation are representative and generalizable to other groups of handicapped preschool children. The greatest difference among

the distributions was for the classification category of speech impairment or problems: approximately 18%. The sample of handicapped children had relatively fewer children with speech problems but greater percentages of children with more visible conditions (i.e., physical) and, perhaps, more severely restricting handicapping conditions (i.e., mentally retarded, emotionally disturbed).

Procedure

Pre-visit Contact

Prior to the site visit to each classroom, a teacher questionnaire and a child information form for each of the children were mailed to each classroom head teacher. These questionnaires took approximately a total of 30 minutes to complete and were to be returned to the observers at the end of each site visit. The teacher questionnaire included: (a) a ten-item Likert-type survey of the teachers' perceptions of their own competency in teaching both handicapped and nonhandicapped children, and their attitudes towards mainstreaming handicapped children and (b) class enrollment and staffing information. The head teachers also were asked to complete a child information form both for the selected handicapped and nonhandicapped children in their class. The child information form contained: (a) a five-item teacher-rating scale of the child's social competency and (b) ten age-appropriate developmental questions taken from the Denver Prescreening Developmental Questionnaire (Frankenburg, van Doornick, Liddell, & Dick, 1976).

Site Visit

One of four observers made the prescheduled site visit to each class. Upon arrival, the observers scheduled the 30-minute observation of free-play activities with the head teachers. They then familiarized themselves with the members of the class by asking the teachers to indicate the two selected children and the other handicapped children of the class.

Before starting the 30-minute observation, the observers drew a floor plan of the free-play classroom arrangement on one-inch-by-one-inch-sectioned graph paper. Each play area was assigned a number. This plan designated the number and relative location of the play areas and the barriers between play areas.

On a separate code sheet, the observers listed and coded the play materials and equipment contained in each play area. The observers could refer to these code sheets when making their child-behavior observations.

Using a 20-second time-sampling procedure (Gordon & Jester, 1973), the observers rotated their observation of the two selected children every two minutes. At the end of ten seconds of observation, they coded and recorded their observations of the child's behavior by entering the appropriate codes in the corresponding boxes of the observation code sheet. A sample coding sheet is provided in Appendix C. Observations were coded in vertical columns of the observation sheet after each interval. The observers had 10 seconds in which to record their observations. At the end of the six recording periods, an observation of the second child was begun following the procedure described above.

This rotation procedure was followed for 30 minutes or until the end of the free-play period; thus, approximately 45 intervals of observation were collected for each child.

Observer training. Three undergraduate students with advanced standing in the Division of Individual and Family Studies at the Pennsylvania State University assisted the investigator in making the classroom observations. In addition to their coursework in child development and early childhood these observers had experience in teaching in early childhood classes. All the initial training and practice reliability sessions were conducted in the Human Development Laboratory classrooms at the Pennsylvania State University and local preschool and day care classes not participating in the study.

The observers' training was conducted by the investigator over a three-week period. During the first week, the investigator identified illustrations of the behavioral definitions and the appropriate codes as they occurred in the training classrooms while the three observers followed and observed the children's behavior. After each training observation session the coding of each illustration was discussed to clarify the definition and ensure agreement among the observers.

The last two weeks of observer training were used to give the observers extensive practice using the behavioral coding system and to establish the levels of interobserver agreement. During these sessions, the observers and investigator simultaneously and independently observed and coded two children's behavior for 20-minute periods. Interval-by-interval comparisons of interobserver agreement were made for each of the

20 practice observations. When necessary, intervals with disagreements were discussed.

Observer reliability. Data collection was begun when the observers reached approximately 80% or better interobserver reliability criteria for each coding category. Reliability for each behavior category was computed with the percentage of occurrence agreement formula.

In order to ensure the maintenance of interobserver reliability over time, periodic checks were conducted. Once the observers were making site visits, they were not observing the same children or classes. Therefore, periodic checks to ensure the maintenance of interobserver reliability again had to be conducted in nonparticipating classrooms.

Table 4 lists the average reliabilities for each child behavior at the end of training and during the periodic reliability checks. Reliabilities ranged from 66.6% to 100%. The category transition failed to reach the established reliability criterion and, therefore, was eliminated from all further analyses.

Coding

The class files containing the results of the teacher questionnaire, the child information forms, the classroom floor plan and material lists, and the observation sheet were coded and scored independently by two coders. The investigator and one of the observers coded the independent/dependent variables by applying the prespecified definitions.

All child-behavior measures were converted to proportions of total number intervals of observation. The use of proportions was necessitated by the unequal numbers of observation intervals that were collected

Table 4

Mean Percentages of Interobserver Reliability

Child-behavior Category	Training	Field-checks
Social orientation		
Unoccupied behavior	37.0	86.3
Intent on individual activity	88.8	79.4
Strongly intent on individual activity	86.8	82.8
Parallel play	87.5	79.0
Associative play	97.7	78.0
Cooperative play	84.4	88.1
Social onlooking	90.9	84.6
Engaged with adults	95.1	98.7
Disruptive behavior	100.0	100.0
Aggressive behavior	100.0	100.0
Transitions[a]	66.6	70.3
Social interactions		
Child-child interactions		
Active-passive	87.3	85.4
Positive-negative	100.0	86.6
Initiated-received	79.0	79.4
Child-adult interactions		
Initiated	69.7	84.7
Received	100.0	93.2

Note. Method of calculation:

$$\% = \frac{\text{Number of Agreements}}{\text{Number of Disagreements \& Agreements}} \times 100$$

[a]Transitions did not approach the reliability criterion and was dropped from further analyses.

across the classrooms. To ensure intercoder agreement, a randomly selected 20% of the class files were scored by both coders and compared for agreement. The coders achieved 100% agreement on all coding definitions and scoring. The operational definitions for the independent variables and dependent variables are presented in the following section.

Independent Variables

The independent variables of this study were the teacher, classroom, and child antecedent characteristics. These definitions are provided in the following sections.

Teacher Characteristics

Definitions. Teachers' characteristics were defined as (a) perceived professional competency in instructing both handicapped and nonhandicapped children, (b) attitudes towards mainstreaming handicapped children in preschool classes, (c) amount of pre-service and inservice training, and (d) number of years experience they had for teaching in integrated settings.

The teacher perceptions and attitudes were defined as the teachers' responses to two five-item subscales of the teacher questionnaire. A sample copy of the teacher questionnaire is provided in Appendix D. Items one through five pertain to teachers' perceptions, while items six through ten pertain to teachers' attitudes.

The amount of teacher training was defined as the number of pre-service classes or inservice training programs dealing with teaching young handicapped in integrated settings in which the teachers had participated. Teachers' responses were scored in the following manner:

1. Little or no training;

2. Some training in highly specialized areas (i.e., Teaching the Deaf Child, Physical Education for the Orthopedically Impaired Child, etc.);

3. Some training in general areas (i.e., Mainstreaming Preschool Children, Educational Planning for Handicapped Children, etc.); and

4. Extensive training in specialized and general areas.

The amount of teacher experience was defined as the number of years the teacher had taught in classes which had at least one handicapped child.

Validation. Fifty-four teachers from the 58 classrooms completed and returned the teacher questionnaire. Four teachers did not return the teacher questionnaire. The ten-item questionnaire was divided into two scales: teachers' perceived competency and teachers' attitude towards mainstreaming. Each scale contained five Likert-type response items. To establish the reliability of each scale which would later be used as two teacher characteristic predictors or independent variables, item analyses of the internal consistency reliability were performed. In addition to internal reliability, the teachers' scores on the two attitudinal scales were correlated with the teachers' levels of training and years of teaching experience using Pearson Product Moment Correlations. The results of these validation procedures are presented in the following sections.

To calculate the internal consistency of the five-item teachers' perceived competency scale, the coefficient Alpha Index of Reliability was used. This index yielded a coefficient of 0.72 or a reliability

estimate of 71.6%. The correlations for each item score to the total scale score are presented in Table 5. Based on these item-total correlations, the estimated average item-total correlation was 0.69. Finally, the five items, when intercorrelated, were estimated to yield an average interitem correlation of 0.34.

The Alpha coefficient of internal consistency for the teachers' attitude scale was calculated at 0.60 or a reliability estimate of 60.5%. The item-total correlations for the five attitude items are presented in Table 6. For the teachers' attitude scale, the estimated average item-total correlation was 0.62. The average interitem correlation was 0.23.

Since the calculation of the Alpha coefficient of internal consistency is conservatively biased for scales with small number of items, the Alpha coefficients for teachers' perceived competency (0.72) and teachers' attitudes (0.60) were accepted as indications that each scale was consistently measuring a single construct. Therefore, the scales were treated as two separate teacher-characteristic predictor variables. Using the Generalized Spearman-Brown Formula (Cronbach, 1960), it was estimated that, had the same scales been extended to 13 items, they would have achieved reliabilities of 90% and 80%, respectively.

A matrix of Pearson Product Moment Correlations among the four teacher characteristics--perceived competency, attitudes towards mainstreaming, training, and experience--is presented in Table 7. Of these correlations, only perceived competency and attitudes towards mainstreaming were significantly correlated at the .01 level. Although

Table 5

Item-total Correlations for Teachers' Perceived Competency Scale

	Item-total r	Adjusted Item-total r
Item 1	0.82	0.82
Item 2	0.62	0.51
Item 3	0.60	0.40
Item 4	0.67	0.52
Item 5	0.76	0.72

Note. N = 54

Table 6

Item-total Correlations for Teachers' Attitude Scale

	Item-total r	Adjusted Item-total r
Item 6	0.62	0.49
Item 7	0.58	0.48
Item 8	0.70	0.56
Item 9	0.68	0.62
Item 10	0.55	0.30

Note. N = 54

Table 7

Correlation Matrix of Teacher Characteristics

	Perceived Competency	Attitude	Training	Experience
Perceived competency	-	.28**	.01	.18
Attitude		-	.03	.08
Training			-	.21
Experience				-

Note. N = 54

**p < .01

perceived competency and attitudes were not highly related either to level of training or years of teaching experience, teachers who perceived themselves as more competent in teaching in an integrated class also had more positive attitudes towards mainstreaming.

Classroom Characteristics

Physical context. The arrangement of the classroom was the organization of the physical space and classroom activities into play areas. The two dimensions of classroom arrangement were: (a) the number of play areas provided and (b) the number of barriers separating adjacent play areas.

The number of play areas was the number of distinct physical activity settings that were observed and counted. These areas may or may not have been separated by visual or physical partitions or barriers.

A barrier was defined as any object which divides play space visually and/or physically into discrete sections. Play areas can be bounded by a maximum of four barriers. A barrier separating two adjacent play areas was only counted once.

The total number of barriers was defined as the summative total of the visual and physical partitions between all the play areas of the classroom.

Classroom materials were classified as simple, complex, multiplex, and super play units according to the definitions derived from the Peters and Petak modifications (1979) to the Kritchevsky, Prescott, and Walling (1973) classification systems. The four classes of play units are defined below.

A simple unit is a play material that has one obvious use and does not have subparts or a juxtaposition of materials which enable the child to manipulate or improvise (i.e., subparts do not contribute new uses to the play material). The simple unit is designed to be used by a single child at one time. An example of a simple play unit would be a puzzle. A more comprehensive listing of examples of the play unit classifications is included in Appendix E.

A complex unit is a play material that has one obvious use and no subparts or juxtaposition of play materials that contribute new uses to the play material. It is designed to be used simultaneously by more than one child. Examples of complex play units include blocks, rocking boats, and trucks.

A multiplex unit is a play material with subparts or juxtaposition of play materials which enable the child to manipulate or improvise upon its use. It must have at least two distinct uses and may be used by more than one child simultaneously. Examples of multiplex units include: trucks and blocks, cars and play garage, play dough and cookie cutters.

A super unit is a multiplex unit that has one or more additional play materials in juxtaposition that contribute one or more new uses to the play unit. Examples of super play units include: trucks, blocks, and ramps; and play dough, cookie cutters, and rolling pins.

The following antecedent measures of classroom materials and equipment were used:

1. The number of play units was the number of simple, complex, multiplex, and super units by category.

2. The total number of play units was the summative total of simple, complex, multiplex, and super play units.

3. The variety score for play units was defined as the total number of different simple, complex, multiplex, and super play units.

Social context. The social context variables dealt with the demographic characteristics of the class enrollment and staffing patterns. These variables included: (a) the total number of handicapped and nonhandicapped children present, (b) the number of handicapped children present, (c) the number of teachers, aides, or other adults present, (d) the ratio of handicapped children to nonhandicapped children enrolled in the classroom, and (e) the distribution and number of different handicapping conditions within the class. These variables are operationally defined below.

The number of children present was the total number of handicapped and nonhandicapped children observed and counted present in the classroom during the site visit.

The number of handicapped children present was the number of children designated as handicapped by the teacher present in the classroom during the site visit.

The number of adults present was the number of teachers, teacher-aides, and parent or adult volunteers present in the classroom during the site visit.

The ratio of handicapped to nonhandicapped children was calculated as the number of handicapped children enrolled to the number of nonhandicapped children enrolled as reported by the teacher. Based upon this ratio, classrooms were classified into three types of classes:

basic, integrated, and special-needs classrooms. For this classification, the following definitions from the Pennsylvania Department of Public Welfare were used:

1. Basic--A basic center is a center in which less than 20% of the total enrollment is diagnosed as exhibiting disabilities.

2. Integrated--An integrated center is a center in which 20-50% of the total enrollment is diagnosed as exhibiting disabilities.

3. Special-needs--A special-needs center is a center in which 50% or more of the total enrollment is diagnosed as exhibiting disabilities.

The distribution of handicapping conditions was obtained as follows. Both the types of the handicapped children's diability category and the respective frequencies of the disability classification were collected for each classroom via the teachers' reports of classroom enrollment on the teacher questionnaire.

Child Characteristics

The child characteristics data were collected on both the handicapped and nonhandicapped children of each class. The child characteristic variables included: (a) the child's developmental or functional level; (b) the child's level of social competency; (c) the child's class attendance and previous preschool experience; (d) the child's handicapping condition; and (e) demographic characteristics such as the child's age, sex, and family information. The following sections operationalize these variables.

Child's developmental level. Based on the teachers' responses to ten age-appropriate questions taken from the Denver Prescreening

Developmental Questionnaire: P.D.Q. (Frankenburg et al., 1976), the child's developmental level was scored as the number of items passed. The selection of age-appropriate questions determined by the child's chronological age was made using the age-item correspondence established by Frankenburg et al. (1976) for the P.D.Q. A copy of the P.D.Q. items is provided in Appendix F.

Two methods of scoring the teachers' responses to the P.D.Q. items were utilized. The first method was to count and record the number of items the teachers score the child as passing. The second method utilized the traditional P.D.Q. scoring procedure (Frankenburg et al., 1976) yielding one of three possible scores:

1. delayed--child passing six or fewer age-appropriate questions;

2. questionable--children passing seven or eight age-appropriate questions;

3. not delayed--children passing nine or ten age-appropriate questions.

Child's social competency. The measurement of children's social competency was based upon a five-item rating scale developed by Peters and Stein (1966). A copy of the child's social competency scale is provided in Appendix F. The original validation of this measure was conducted upon an undifferentiated sample of Head Start children. Therefore, tests of this measure's reliability with handicapped children and validity in discriminating a sample of handicapped children from nonhandicapped children were conducted. An additional test of the correspondence between teachers' ratings of the children's social

competency and the children's observed social behaviors were performed using Pearson Product Moment Correlations.

To establish the reliability of the children's social competency for both handicapped and nonhandicapped children, separate item analyses of internal consistency were performed. The Alpha coefficients were 0.576 for ratings of handicapped children and 0.575 for ratings of nonhandicapped children. With the minimal difference in Alpha coefficients of 0.001, the measures of social competency were equally reliable for the two groups of children. Therefore, an item analysis of the combined ratings for handicapped and nonhandicapped children was performed. The results of this analysis yielded an Alpha coefficient of 0.74. The average item-total correlation was 0.71 based upon the individual item-total correlations presented in Table 8.

Of the five items, Item 3 with an adjusted item-total correlation of only 0.20 made the smallest contribution to the internal consistency of the scale. This item was the only question in which teachers were asked to rate children's negative social behaviors.

Since the social competency ratings of handicapped and nonhandicapped children were used as child-characteristic predictor variables in subsequent analyses, it was necessary to establish that differences in social competency ratings would discriminate between groups of handicapped children and nonhandicapped children. To assess this aspect of construct validity, it was hypothesized that: Teachers would not rate handicapped children significantly lower on social competency than nonhandicapped children.

Table 8

Correlations of Item-total Scores
for Children's Social Competency Ratings

	Item-total r	Adjusted Item-total r
Item 1	.72	.72
Item 2	.82	.69
Item 3	.44	.20
Item 4	.77	.70
Item 5	.79	.76

This hypothesis was tested by a one-way analysis of variance comparing the ratings of handicapped and nonhandicapped children. Table 9 presents the summary of this analysis. The construct null hypothesis was rejected at the .001 level of significance ($F = 76.52$, $df = 1,57$); handicapped children were rated significantly lower on social competency than were nonhandicapped children.

Pearson Product Moment Correlations were performed to assess the degree of correspondence between children's scores on the five rating items and their observed levels of these social behaviors in the classroom. Of the five item-behavior correlations only Item 2, the initiation of social interactions, was significant at the .01 level. The low rating-behavior correlations indicate that teacher's ratings of children's social competency were not identical or highly related to children's observed levels of social behavior in the classrooms.

The teachers' assessments of children's social competency, however, were positively correlated with children's age and developmental levels

Table 9

Comparison of Social Competency Ratings
of Handicapped and Nonhandicapped Children

Group	Mean Social Ratings[a]
Handicapped children	12.02
Nonhandicapped children	15.90

Analysis of Variance Summary Table

Source	MS	df	F	P.
Group	436.4224	1	76.52	< .001
Error	5.703116	57		

[a]Maximum score = 21

at the .01 level. These correlations indicate that, as would be expected, teacher ratings of children's social competency increase with chronological age and the developmental functioning levels of the children.

Child's class attendance. Class attendance is defined as the number of days the child has been present in the classroom from the beginning of the current year.

Child's previous early education experiences. Previous education experience is the teacher's report of the child's previous or concurrent enrollment in other early education programs.

Child's handicapping condition. This variable was defined as the diagnostic/assessment classification assigned to the child's handicapping condition. This classification was taken from the teacher's report and the child's assessment records. On the basis of the combined federal guidelines for Head Start and day care programs, the following handicapping conditions were used to classify children's disabilities: (a) deafness, (b) hearing impairment, (c) blindness, (d) visual impairment, (e) speech impairment, (f) physical or orthopedic impairments, (g) other health impairments, (h) mental retardation, (i) emotional disturbances, (j) learning disabilities, and (k) developmental delays.

Dependent Variables

Definitions of Child Behaviors

Social orientation was defined as the level of the target child's orientation, attention, and involvement with the play materials, teacher, and other children in the classroom. The following sections define the eight categories of social orientation.

Strongly intent on individual activity. This category was defined as the child playing alone with materials, toys, and/or equipment. The child showed continuous attending and uninterrupted concentration in his/her activity for a full ten seconds. The child was not distracted by the activities around him/her and made no efforts to move closer or to speak to others. This category is comparable to the level of solitary play of the Parten Scale (Parten, 1932).

Intent on individual activity. This category is similar to strongly intent, but the target child's attending to his/her activity was less continuous. The child played alone with play materials but paused briefly (i.e., less than five seconds) to glance around the room or to comment to others. The child quickly returned, attending to his/her own activity.

Actively engaged with adults. This behavior category was scored when the child was playing, attending, listening, and/or talking with the teacher(s) or other adult(s).

Social play. This behavior category was scored when the child was in close proximity, engaged in conversation and/or engaged in a play activity with other children. The three subcategories of social play were taken from the Parten Scale of levels of social play (Parten, 1932). When social play was observed, one of the following three subcategories had to be coded:

1. Parallel play was defined as the child playing with the same play materials and in close proximity (i.e., three to four feet) to other children. The child was playing alone and did not attempt to influence the activities of the other children. The child did not engage in conversation.

2. Associative play was defined as the child playing with other children although there was no division of labor, roles assigned, or rules of organization in their activity. Conversation among children occurred and materials were shared.

3. Cooperative play was defined as the child playing in a group of children that was organized to reach a goal, acting out a dramatization, or playing a formal game. Roles were taken and/or assigned by the children. Children helped and supplemented the activities of the others in the group.

Social onlooking. Onlooking was defined as the child passively watching the activities and behaviors of the teacher(s) and/or the other children for more than five seconds. The child may or may not have been engaged in an activity of his/her own.

Unoccupied behavior. This behavior category was scored when the child did not appear interested or engaged in any activity. The child wandered aimlessly around the room, followed the teacher, or stood or sat in one location. The child did not watch, approach, or initiate contact with other children or play materials.

Aggressive actions. This category was scored when the child was engaged in one or more of the following behaviors: fighting (i.e., biting, pinching, striking another person with either his/her body or objects, kicking, and/or nonplayful pushing) or disrupting the activity of others (i.e., grabbing toys away, destroying property of the other children, and/or knocking over or throwing materials).

Disrupting actions. Disrupting action was scored when the child engaged in one or more of the following behaviors: crying, shouting, screaming, tantruming, and/or whining.

Social interaction was defined as the verbal, physical, or gestural behaviors which brought the child into contact with the adults and/or children of the class. The interpersonal behaviors of three possible social partners were coded for each interval: The teacher, the "target" child, and the other child. The other child was defined as the nontarget child in direct contact or closest proximity to the "target" child. The other child could change from interval to interval depending upon the interactions and movement of the target child. The observer also recorded if the other child was a handicapped or nonhandicapped child.

Social interaction was coded for initiation, affect, and type behavior. The following section provides the definitions for these categories.

Initiation of interaction. Three categories of initiation were defined as follows:

1. Child-initiated interaction was scored when the child solicited, elicited, or began the interaction with another child or adult. Examples in this category are: asking questions, greeting a child, showing an object, beginning a conversation, etc.

2. Other-initiated interaction was scored when the "target" child's interpersonal behavior followed the initiation of another child or adult.

3. Ongoing interaction was scored when the social interaction of the child continued from the preceding interval or the initiation of the interaction occurred during the ten-second recording period.

Type of interaction. Two types of social behavior were defined as active interchange and passive watching:

1. Active interchange was scored when the child engaged in one or more active social behaviors with another child or teacher. This includes all positive and negative behaviors listed below except passive watching or observing.

2. Passive watching was scored when the child was observing the behaviors of another child or teacher while not engaged in an activity of his/her own.

Affect in interaction. The three categories of affect are defined as positive, negative, and neutral social interactions. The following section provides the operationalized definitions of these categories:

1. Positive social interaction was scored when the child initiated or received one or more of the following behaviors: (a) talking with an adult or child, (b) displaying affection, (c) demonstrating approval, (d) providing assistance, and (e) sharing equipment, materials, and/or toys.

2. Negative social interaction was scored when the child initiated or received one or more of the following behaviors: (a) aggression towards an object, (b) aggression towards a person, (c) verbal abuse, (d) verbal reprimands, and (e) rejecting gestures and avoidance.

3. Neutral interaction was scored when the child was not engaged in either positive or negative social interactions as defined above.

Measures of Child Behavior

Ten child-behavior measures were used as the dependent variables of this study. These measures are operationally defined below.

Number of active interactions. This measure was defined as the child's summative total of intervals coded as active interchanges with other children.

Number of passive interactions. This measure was defined as the child's total number of intervals coded as passive watching.

Number of positive interactions. This measure was defined as the child's summative total of intervals coded as positive social interactions in which the social partner was either a handicapped or nonhandicapped child, or a group of children containing both handicapped and nonhandicapped children.

Number of social interactions initiated. This measure was defined as the total number of intervals the child was scored as initiating interactions with peers.

Number of social interactions received. This measure was defined as the total number of intervals the other child was scored initiating a social interaction towards the "target" child.

Number of negative social interactions. This measure was defined as the total number of intervals the child was scored as engaged in negative social interactions with the other children.

Level of social play. This measure was defined as the weighted average of the child's level of play across the observation intervals. To calculate this weighted average, the levels of social play were multiplied by the following values: unoccupied (1), onlooker (2),

strongly intent on individual activity (3), parallel (4), associative (5), cooperative (6), engaged with adults (1); they were then divided by the total number of intervals of observation.

Number of interactions initiated towards adults. This measure was defined as the number of intervals the child was scored as initiating social interaction with an adult social partner.

Number of interactions received from adults. This measure was defined as the number of intervals the child was scored as receiving an initiation from an adult social partner.

Data Analysis

Validation of the teacher questionnaire and child information form was carried out to establish the internal consistency of each of three scales used as a predictor variable: (a) teachers' perceived competency, (b) teachers' attitudes towards mainstreaming, and (c) children's social competency rating. Additional validation procedures were conducted for the teachers' ratings of children's social competency by calculating the degree of correspondence between the items of the rating scale and observational measures of children's social behaviors. The results of these validations were presented with the measures in this chapter.

Descriptive procedures to determine naturally occurring patterns of program, teacher, and child characteristics were performed. These procedures included calculations of the means, frequencies, and, when possible, distributions of several major antecedent characteristics. In addition to these procedures, Pearson Product Moment Correlations were

carried out to determine the degree of interdependence among contextual variables in integrated early childhood settings.

A series of analyses of variance were conducted upon the observational measures of child behavior to compare the patterns of social interaction and play behaviors of handicapped children and nonhandicapped children. Since the two observed children from each of the classrooms constituted matched pairs, an Analysis of Variance Model based upon the dependent t statistical test was used.

Finally, stepwise multiple regression analyses were performed for antecedent measures and transactional child-behavior measures to determine whether certain program, teacher, and child characteristics could predict variations in the social interactions and play behaviors of handicapped children and nonhandicapped children. Comparisons of the regression coefficients from regression models separately derived for handicapped and nonhandicapped children were made to determine the differential influence of certain contextual variables upon the behavior patterns of these two groups.

A complete presentation of these analyses is made in Chapter V.

CHAPTER V

ANALYSIS OF RESULTS

In this chapter, the results of the data analyses are presented as they relate to the research objectives and questions of the present study. The three major research objectives posed the following questions: (a) What are the naturally occurring patterns of program, teacher, and child characteristics which describe the integrated early childhood education settings in the principally rural area of central Pennsylvania? (b) Are there differences in the social interaction patterns and play behaviors of handicapped and nonhandicapped children within these integrated settings? and (c) What are the program, teacher, and child characteristics that contribute to the successful social integration of young handicapped children in early childhood education settings? Questions b and c were broken down into 12 transactional hypotheses and four antecedent questions, respectively.

As noted in Chapter IV, the data analysis included the following statistical tests: Pearson Product Moment Correlations, analyses of variance, Tukey Comparisons of Mean Differences, and stepwise multiple regression analyses. When testing the hypotheses, the results of these statistical tests were considered significant when they reached the .01 level. This relatively conservative criterion for rejecting the null hypotheses was established to minimize the experiment-wise error rate for Type I errors.

The results of the descriptive and hypothesis-testing statistical procedures are presented below. The areas of investigation--descriptive patterns of contextual characteristics, comparisons of handicapped and

nonhandicapped children, and antecedent characteristics related to social interaction--will serve as the headings for the three major sections of this chapter.

Descriptive Patterns of Contextual Characteristics

Program Characteristics

The description of the patterns of program characteristics across the 58 classes includes estimates of central tendency (i.e., means), the ranges of variability, and correlations among several program characteristics. Table 10 presents the means and ranges for the program characteristics of: (a) class enrollments, (b) number of handicapped children enrolled, (c) number of adults, (d) number of play areas, (e) number of barriers, and (f) number of play units. These six program characteristics showed a great deal of variability across the 58 classrooms.

Within the sample, 42.1% of the 58 classes were classified as basic classes with total enrollments of less than 20% handicapped children; 47.4% of the sample were classified as integrated classes with 20-50% of the children enrolled being handicapped children; for the remaining 10.5% of the classes, 50% or more of their enrollment were handicapped children.

Finally, Pearson Product Moment Correlations were performed to determine the correspondence among selected program characteristics. The results of the correlations are presented in the matrix form in Table 11. Since the program characteristics were intercorrelated at .65 or less, each characteristic was independently entered in the subsequent regression analyses. The following positive correlations

Table 10

Program Characteristics across
Fifty-eight Integrated Preschool Classes

Characteristic	Mean	Range
Social context		
Total number of children enrolled	17.89	6-43
Number of handicapped children enrolled	4.25	1-15
Number of adults	3.24	1-8
Physical context		
Number of play areas	7.10	2-16
Number of barriers	5.01	0-11
Number of play units	12.24	4-17

Note. N = 58

Table 11

Intercorrelations Among
Program Characteristics

	1	2	3	4	5	6	7
1. Total enrollment							
2. Enrollment of handicapped	.46*						
3. Type of center	-.11	.65*					
4. Number of adults	.29*	.17	.01				
5. Number of areas	-.003	-.02	.14	.04			
6. Number of barriers	.18	-.09	-.18	.24	.41*		
7. Number of play units	-.27	-.15	.11	.02	.52*	.35*	-

were significant: total enrollment with enrollment of handicapped; total enrollment with the number of adults present; number of barriers with number of areas; and number of areas with number of play units.

Teacher Characteristics

The description of the patterns of teacher characteristics found across the sample of 58 classes includes the means, as estimates of central tendency, and the ranges of variability. Since the intercorrelations among the four teacher characteristics were presented previously, only the significant correlations will be summarized in this section. The description of teacher characteristics will conclude with the frequencies and distributions of the four teacher characteristics.

The means and ranges for the teacher characteristics were: (a) perceived competency scale ($\bar{X}$ = 17.09, range = 9-24); (b) attitude towards mainstreaming scale ($\bar{X}$ = 16.72, range = 10-22); (c) amount of training ($\bar{X}$ = 2.33, range = 1-4); and (d) number of years experience ($\bar{X}$ = 3.46, range = 1-12). These figures are based upon the responses of the 54 teachers who returned the teacher questionnaires.

Of the intercorrelations among the four teacher characteristics, only the Pearson Product Moment Correlation between teachers' scores on the perceived competency and attitude to mainstreaming scales (r = .28) was significant. Teachers' perceptions of their competency and their attitudes towards mainstreaming were not significantly related either to teachers' level of training or to the number of years of teaching experience. However, teachers' attitudes towards mainstreaming were correlated positively to teachers' perceptions of competency.

The distributions of teacher characteristics presented in Table 12 illustrate that the 54 teachers were distributed almost equally around the means of the two scales and across the four levels of training. However, a greater contrast is found in the distribution of teaching experience. Approximately 54% of the teachers were in their first or second year of teaching an integrated class.

Child Characteristics

Several child characteristics of the handicapped and nonhandicapped children were presented in Chapter IV and in an earlier section of this chapter. In this section, only a summary of these results will be reported.

Table 12

Distributions of Teachers on Four Characteristics

Characteristics	Number of teachers responding	Percentage of teachers responding
Perceived competency		
Scored below the Mean of 17.09	31	57.4
Scored above the Mean of 17.09	23	42.6
Attitude towards mainstreaming		
Scored below the Mean of 16.72	24	51.9
Scored above the Mean of 16.72	30	49.1
Amount of training		
1. Little or no training	16	29.6
2. Some training in specialized areas	14	25.9
3. Some training in general areas	14	25.9
4. Training in both specialized and general areas	10	18.5
Years of experience		
1-2	29	53.7
3-4	6	11.1
5-6	11	20.4
7-8	5	9.3
9-10	1	1.9
11-12	2	3.7

Note. N = 54

Although the handicapped and nonhandicapped groups of children were equally matched for chronological age and sex, they were, however, significantly different at the .01 levels on the antecedent characteristics of social competency and developmental level, as measured by teacher ratings. Handicapped children were rated significantly lower than nonhandicapped children on teachers' ratings of social competency and developmental level. The summary of these comparisons is presented in Table 13.

Comparisons of Handicapped and Nonhandicapped Children

Overview of Comparisons

In this section, the results of the tests of the transactional hypotheses are presented. Analyses of variance were performed to assess the differences between groups of handicapped and nonhandicapped target children. An analysis of variance model for dependent measures, based upon the dependent *t* statistical test, was utilized in the comparisons across groups. Within this model, the two target children from each class were entered as matched pairs. Therefore, the pair of target children represents a within-classroom variable with two levels--handicapped and nonhandicapped. Since the unit of analysis was classes not individual children, the between-subject factor is classroom variability. A limitation of this ANOVA model is that the between-subject factor (i.e., individual classroom variability) cannot be partialled from the between subject-error variance. Therefore, the differences between individual classrooms could not be analyzed. The differences reported for handicapped and nonhandicapped children are based upon the group mean differences across all classes.

Table 13

Comparisons of Handicapped
and Nonhandicapped Children on Teacher Ratings

Group	N	Mean Developmental level Rating[a]	Mean Social competency Rating[b]
Handicapped	58	5.29	12.02
Nonhandicapped	58	8.29	15.90

One-way Analysis of Variance Comparison of Social Competency Ratings

Source	SS	MS	df	F	P
Between subjects					
Error	705.284	12.373	57		
Within subjects					
Group	436.422	436.422	1	76.52	$p < .001$
Error	325.078	5.703	57		

N = 116

One-way Analysis of Variance Comparison of Developmental Level

Source	SS	MS	df	F	P
Between subjects					
Error	431.034	7.562	57		
Within subjects					
Group	261.000	261.000	1	61.22	$p < .001$
Error	243.000	4.263	57		

N = 116

[a]Maximum developmental level rating = 10.

[b]Maximum social competency rating = 21.

When statistically significant interaction effects were found in two-way and three-way analyses of variance, the Tukey (WSD) Wholly Significant Difference follow-up procedure was used (Myers, 1972). The WSD allows for the simultaneous multiple comparisons of differences between means while controlling for the family-wise Type I error rate. When testing hypotheses, the alpha level for each WSD comparison was set at the .01 level.

The comparisons of handicapped and nonhandicapped children's social and play behavior are presented in the original order of the transactional hypotheses. Restatements of the hypotheses will precede the presentation of results. When a two-way or three-way analysis of variance for dependent measures was performed to test simultaneously two or more hypotheses, the results of the analysis precede the hypotheses.

Comparisons of Handicapping Conditions

Before comparisons of handicapped and nonhandicapped target children's behaviors were made, the homogeneity of the handicapped group was examined across the different handicapping conditions. One-way analyses of variance for unequal n's were performed on the children's social competency and developmental levels ratings. The summary tables for these comparisons along with the group means are presented in Table 14.

Although there were no significant differences among the children's developmental levels across the classification groups, there were significant differences in the children's social competency ratings at the .01 level. The difference between the low incidence group ($\bar{X}$ = 13.89) and the mental retardation and learning disability group

Table 14

Comparisons of Subgroups
of Handicapping Conditions

Subgroups	N	Social Rating $\bar{X}$	Development Level $\bar{X}$
Speech impaired	17	12.23	5.41
Physically impaired	8	12.75	6.00
Mentally retarded and learning disabled	8	10.14	3.29
Emotionally disturbed	7	10.57	6.57
Developmentally delayed	9	13.00	4.67
Low incidence conditions[a]	9	13.89	6.22

Analysis of Variance:
Comparisons of Social Competency Ratings

Source	SS	MS	df	F ratio	p
Subgroup	82.016	16.403	5	3.35	0.01
Error	250.019	4.902	51		

Analysis of Variance:
Comparison of Developmental Levels

Source	SS	MS	df	F ratio	p
Subgroup	54.693	10.939	5	1.79	0.13
Error	310.816	6.094	51		

Note. One child's handicapping condition was not reported; $n = 57$

[a]Hearing impaired, visually impaired, health impaired

($\bar{X}$ = 10.14) exceeded the WSD critical value of the .01 level. None of the other classification groups were significantly different from one another.

Based on the results of the above comparisons, the handicapped children across the different classification conditions were considered sufficiently similar on antecedent child characteristics to constitute a single group with n of 58.

Comparisons of Active and Passive Interactions

Analysis of variance. In a two-way analysis of variance for dependent measures, handicapped and nonhandicapped children's levels of active social interaction and passive social interaction were compared. Two significant effects were found: A group X activity interaction (F = 15.48, df = 1,57) and an activity main effect (F = 42.22, df = 1,57). Table 15 presents the complete summary table of the analysis of variance.

Follow-up procedure. Since the group X activity effect was significant, the differences between the cell means ($Active_H\bar{X}$ = 13.51, $Passive_H\bar{X}$ = 41.05, $Active_N\bar{X}$ = 23.70, $Passive_N\bar{X}$ = 34.29) were compared to the WSD critical values at the .01 level, 7.21 for group effects at the levels of activity and 9.52 for activity effects at levels of group.

The results of the analysis of variance and WSD comparisons were used to test Hypothesis 1 and Hypothesis 2.

Hypothesis 1. There will be no difference between the numbers of intervals handicapped children and nonhandicapped children engage in active social interaction with their peers.

Table 15

Comparisons of Groups on Active and Passive Interactions

Mean Number of Intervals		
	Active	Passive
Handicapped	13.51	41.05
Nonhandicapped	23.70	34.29

Analysis of Variance Summary Table

Source	MS	df	F	p
Between subjects				
Error	165.7366	57		
Within subjects				
Group	171.2088	1	1.00	0.322
Error	171.2543	57		
Activity	21,080.7400	1	42.22	< .01
Error	499.3428	57		
Group X Activity	4,167.5800	1	15.48	< .01
Error	269.1565	57		

Note$_1$. N = 116

Note$_2$. MS (Error) for simple effects:

220.2054 (df = 108) Group effects at levels of Activity
384.2497 (df = 104) Activity effects at levels of Group

The difference between $Active_H$(13.51) and $Active_N$(23.70) exceeded the WSD critical value at the .01 level. The null hypothesis was rejected; nonhandicapped children engage in more active social behaviors than do handicapped children.

Hypothesis 2. There will be no difference between the numbers of intervals handicapped and nonhandicapped children spend in passive social interaction.

Although the significant main effect of activity showed that both groups of children spent more time in passive social interaction than in active social interaction, the difference between the means $Passive_H$ ($\overline{X}$ = 41.05) and $Passive_N$($\overline{X}$ = 34.29) did not exceed the WSD critical value for the .01 level. Hypothesis 2 was supported.

Comparisons of Initiating and Receiving Interactions

Analysis of variance. A two-way analysis of variance for dependent measures was used to compare handicapped and nonhandicapped children's levels of initiating and receiving social interaction with peers. Two significant effects were found: A group X direction interaction (F = 38.31; df = 1,57). Table 16 presents the summary of this analysis.

Follow-up procedure. Since the group X direct interaction was significant, the differences between group X direction means ($Initiates_H$ $\overline{X}$ = 6.93; $Receives_H\overline{X}$ = 3.71; $Initiates_N\overline{X}$ = 9.68; $Receives_N\overline{X}$ = 3.52) were compared to the WSD critical values for the .01 level. For simple effects of group the critical value was 2.66 while for simple effects of direction the critical value was 2.64.

Table 16

Comparison of Groups on Direction of Interactions with Peers

Mean Number of Intervals		
Group	Initiates	Receives
Handicapped	6.93	3.71
Nonhandicapped	9.68	3.52

Analysis of Variance Summary Table

Source	MS	df	F	p
Between subjects				
Error	63.67900	57		
Within subjects				
Group	95.56545	1	2.82	0.10
Error	33.89212	57		
Direction	1,276.05500	1	38.31	< 0.01
Error	33.31073	57		
Group & Direction	125.00890	1	4.83	0.03
Error	25.88487	57		

Note$_1$. N = 116

Note$_2$. MS (Error) for simple effects:

29.88500 (df = 111) Group effects at levels of Direction
29.59780 (df = 112) Direction effects at levels of Group

The results of the analysis of variance and WSD comparisons were used to test Hypothesis 3 and Hypothesis 4.

Hypothesis 3. There will be no difference between the numbers of intervals in which handicapped children and nonhandicapped children initiate social interactions with other children.

The difference between the means Initiates_H and Initiates_N, in exceeding the WSD critical value, was significant at the .01 level. The hypothesis was not supported; handicapped children initiated fewer interactions with other children than did nonhandicapped children.

In testing the difference between direction main effect means (Initiates $\bar{X}$ = 8.30 and Receives $\bar{X}$ = 3.61), the difference exceeded the WSD critical value, 2.05, for the .01 level. Both the handicapped and nonhandicapped target groups initiated more social interaction with their peers than they received from their peers.

Hypothesis 4. There will be no difference between the numbers of intervals in which handicapped children and nonhandicapped children receive social interactions from their peers.

The difference between the means of interactions received for handicapped children ($\text{Receives}_H \bar{X}$ = 3.71) and nonhandicapped children ($\text{Receives}_N \bar{X}$ = 3.52) did not exceed the WSD critical value. The hypothesis was supported.

Comparisons of Interactions by Partner and Affect

Analysis of variance. To examine the patterns of interactions by social partner (i.e., handicapped, nonhandicapped, or mixed groups of other children) and affect (i.e., positive and negative interactions),

a three-way analysis of variance for dependent measures was performed. The results of this analysis are summarized in Table 17. All three main effects and three interaction effects were significant.

Follow-up procedure. With the significant triple interaction, group X partner X affect ($F = 4.61$, $df = 2,114$), the WSD comparisons were performed on the differences between cell means. These means are presented in Table 18. The WSD critical values were: group at levels of partner, 3.37; group at levels of affect, 2.94; partner at levels of group, 4.72; partner at levels of affect, 4.95; affect at levels of group, 3.23; and affect at levels of partner, 3.85.

The results of the three-way analyses of variance and WSD comparisons were used to test Hypotheses 5-8.

Hypothesis 5. There will be no difference among the number of intervals nonhandicapped children interact with handicapped peers, nonhandicapped peers, and mixed groups of peers.

The WSD comparisons were conducted in the following manner. The differences between nonhandicapped children's means of positive social interactions with handicapped children ($\bar{X} = 2.39$), nonhandicapped children ($\bar{X} = 17.42$), and mixed groups of children ($\bar{X} = 4.28$) were compared to the WSD critical value, 4.72. Nonhandicapped children had a greater number of positive interactions with nonhandicapped children than they did with either handicapped children or mixed groups of children. The differences between nonhandicapped target children's negative social interactions with handicapped children ($\bar{X} = 0.45$), nonhandicapped children ($\bar{X} = 1.70$), and mixed groups ($\bar{X} = .041$) were

Table 17

Summary of Analysis of Variance
Comparing
Target Group X Social Partner X Affect

Source	MS	df	F	p
Between subjects				
Error	74.37306	57		
Within subjects				
Group	480.00560	1	12.38	0.001
Error	38.77068	57		
Partner	2,919.54800	2	30.02	0.000
Error	97.23738	114		
Group X Partner	210.90780	2	3.81	0.025
Error	55.35428	114		
Affect	5,355.19400	1	98.52	0.000
Error	54.35359	57		
Group X Affect	462.88740	1	13.49	0.001
Error	34.32112	57		
Partner X Affect	1,842.99100	2	26.22	0.000
Error	70.27643	114		
Group X Partner X Affect	202.23510	2	4.61	0.012
Error	43.82839	114		

Note. N = 116

Table 18

Mean Number of Intervals of Interactions by Social Partner and Affect

	Social Partner					
	Handicapped		Nonhandicapped		Mixed	
Affect	Positive	Negative	Positive	Negative	Positive	Negative
Target Group	$\bar{X}$	$\bar{X}$	$\bar{X}$	$\bar{X}$	$\bar{X}$	$\bar{X}$
Handicapped	2.41	0.53	10.03	1.67	1.77	0.26
Target Group	$\bar{X}$	$\bar{X}$	$\bar{X}$	$\bar{X}$	$\bar{X}$	$\bar{X}$
Nonhandicapped	2.39	0.45	17.42	1.70	4.28	0.41

Note. N = 116

compared to the WSD critical value, 4.72. There were no significant differences. Finally, the difference between nonhandicapped target children's positive social interactions ($\bar{X}$ = 17.42) and negative interactions ($\bar{X}$ = 1.70) with nonhandicapped children were compared to the WSD critical value, 3.23. This difference was significant: nonhandicapped children had more positive social interactions with nonhandicapped peers than negative social interactions.

The results of these comparisons led to the following conclusions. Nonhandicapped target children had significantly more positive interactions with nonhandicapped children than with either handicapped children or mixed groups of handicapped and nonhandicapped children. There were no differences in the numbers of negative social interactions nonhandicapped target children had with handicapped, nonhandicapped, or mixed groups of children. Finally, nonhandicapped children had a significantly greater number of positive interactions than negative interactions with nonhandicapped children. Hypothesis 5 was not supported.

Hypothesis 6. There will be no difference among the numbers of intervals handicapped children interact with handicapped peers, nonhandicapped peers, and mixed groups of peers.

The WSD comparisons were conducted in the following order. The differences between handicapped children's positive social interactions with handicapped children ($\bar{X}$ = 2.41), nonhandicapped children ($\bar{X}$ = 10.03), and mixed groups of children ($\bar{X}$ = 1.77) were compared to the WSD critical value, 4.72. Handicapped children had a greater number of positive social interactions with nonhandicapped peers than they did

with handicapped peers or mixed groups. There were no significant differences in the number of negative social interactions handicapped children had with the three groups of social partners. Finally, the difference between handicapped children's positive interactions ($\bar{X}$ = 10.03) and negative interactions ($\bar{X}$ = 1.67) with nonhandicapped children was compared to the WSD critical value, 3.23. This difference was significant at the .01 level.

The results of these comparisons led to the following conclusions. Handicapped children have significantly more positive interactions with nonhandicapped children than with either handicapped children or mixed groups of handicapped and nonhandicapped children. There were no differences in the number of negative interactions handicapped target children had with handicapped, nonhandicapped, or mixed groups of children. And finally, handicapped children had more positive than negative interactions with nonhandicapped children. Hypothesis 6 was not supported.

Hypothesis 7. There will be no difference between the numbers of intervals in which handicapped children and nonhandicapped children have positive interactions with their peers.

The following WSD comparisons were performed. The differences between: (a) handicapped children's ($\bar{X}$ = 2.41) and nonhandicapped children's ($\bar{X}$ = 2.39) positive interactions with handicapped children; (b) handicapped children's ($\bar{X}$ = 10.03) and nonhandicapped children's ($\bar{X}$ = 17.42) positive interactions with nonhandicapped children; and (c) handicapped children's ($\bar{X}$ = 1.77) and nonhandicapped children's ($\bar{X}$ = 4.28) positive social interactions with mixed groups of children

were compared to the WSD critical value, 3.37. The only difference which exceeded the critical value was that between handicapped and nonhandicapped children's positive interactions with nonhandicapped peers. The hypothesis received partial support. Nonhandicapped target children had more positive interactions than did handicapped children; but this difference was only significant when the social partner was a nonhandicapped child.

Hypothesis 8. There will be no difference between the numbers of intervals in which handicapped children and nonhandicapped children have negative interactions with their peers.

The following WSD comparisons were made. The differences between: (a) handicapped children's ($\bar{X}$ = 0.53) and nonhandicapped children's ($\bar{X}$ = 0.45) negative social interactions with handicapped children; (b) handicapped children's ($\bar{X}$ = 1.67) and nonhandicapped children's ($\bar{X}$ = 1.70) negative interactions with nonhandicapped children; (c) handicapped children's ($\bar{X}$ = 0.26) and nonhandicapped children's ($\bar{X}$ = 0.41) negative social interactions with mixed groups of children were compared to the WSD critical value, 3.37. Hypothesis 8 was supported.

There were no significant differences in the number of handicapped and nonhandicapped target children's negative social interactions with handicapped or nonhandicapped children or mixed groups of children.

Comparisons of Levels of Social Play

Analysis of variance. A two-way analysis of variance for dependent measures was performed to compare the groups of children on

eight levels of social play behaviors. The data were entered as the proportions of total time the children were scored at each play behavior. The eight play behaviors were taken from the measure of Social Orientation. These behaviors were: Unoccupied (A), Intent on Individual Activity (B), Strongly Intent on Individual Activity (C), Parallel Play (D_1), Associative Play (D_2), Cooperative Play (D_3), Social Onlooker (E), and Engaged with Adults (F). The analysis of variance summary table is presented in Table 19. There were two significant effects: A group X level interaction ($F = 4.71$, $df = 7,339$) and a main effect of level ($F = 47.91$, $df = 7,399$).

Follow-up procedure. The WSD comparisons were performed on the difference between the cell means presented in Table 19. The WSD critical value, 9.76 was exceeded by only one mean difference. This difference was between the handicapped children's level of associative play ($\bar{X} = 13.92$) and the nonhandicapped children's level of associative play ($\bar{X} = 23.67$).

Hypothesis 9. There will be no differences between the handicapped children's and the nonhandicapped children's level of social play.

Although nonhandicapped children spent a greater proportion of their time in associative play than did handicapped children, there were no other level differences that were statistically significant. An ordering of each group's means from highest to lowest is presented in Table 20. The similarity of these orderings, combined with the finding of only one statistically significant between-group difference, suggests

Table 19

Comparisons of Groups on Levels of Social Play

Mean Proportions of Intervals								
	Levels of Social Play							
	A	B	C	D_1	D_2	D_3	E	F
Handicapped	3.84	7.51	3.99	25.82	13.92	4.21	12.70	22.27
Nonhandicapped	1.71	7.82	5.59	23.41	23.67	5.42	8.20	19.86

Source	MS	df	F	p
Between subjects				
Error	11.822620	57		
Within subjects				
Group	7.298790	1	1.30	0.26
Error	5.619525	57		
Level	8,241.188000	7	47.91	< .01
Error	172.010100	399		
Group X Level	561.192400	7	4.71	< .01
Error	119.015500	399		

Note$_1$. N = 116

Note$_2$. MS (Error) for simple effects:

104.8410 (df = 404) Group effects for levels of Levels
145.5128 (df = 772) Level effects for levels of Group

Table 20

Ordered Mean Proportions of Intervals of Levels of Social Play

Handicapped			Nonhandicapped		
Highest		$\bar{X}$	Highest		$\bar{X}$
D_1	Parallel play	25.82	D_2	Associative play	23.67
F	Engaged with adults	22.27	D_1	Parallel play	23.41
D_2	Associative play	13.92	F	Engaged with adults	19.86
E	Onlooker	12.70	E	Onlooker	8.20
B	Intent on individual activity	7.51	B	Intent on individual activity	7.82
D_3	Cooperative play	4.21	C	Strongly intent on individual activity	5.59
C	Strongly intent on individual activity	3.99	D_3	Cooperative	5.42
A	Unoccupied	3.84	A	Unoccupied	1.71
Lowest			Lowest		

Note. n = 116

that handicapped and nonhandicapped children had similar patterns of social play. There appears no reason to reject the null hypothesis.

Comparisons of Average Number of Children in Play Groups

Analysis of variance. The results of the two one-way analyses of variance comparing the average number of children in the handicapped children's play groups ($\bar{X}$ = 1.94) and nonhandicapped children's play groups ($\bar{X}$ = 2.09); and the modal size of the play groups of handicapped children ($\bar{X}$ = 1.64) and nonhandicapped children ($\bar{X}$ = 1.72) were not significant at the .01 level.

Hypothesis 10. There will be no difference between the sizes of the play groups of handicapped and nonhandicapped children.

The differences failed to reach the statistical significance necessary to reject the null hypothesis: There were no differences between the size of the handicapped children's play groups and the nonhandicapped children's play groups. The hypothesis was supported.

Comparisons of Interactions with Adults

Analysis of variance. In the two-way analysis of variance comparing the children's interactions initiated and received with adults, two results were significant--the group X direction interaction (F = 4.41, df = 1,57) and the direction main effect (F = 10.55, df = 1,57). Table 21 presents a complete summary table of this analysis.

Follow-up procedure. With the significant group X direction interaction, the WSD comparisons were performed on the cell means. The WSD critical values were 3.43 for simple group effects and 3.32 for

Table 21

Comparisons of Groups on Interactions with Adults

Mean Number of Intervals		
Group	Initiates	Receives
Handicapped	$\bar{X}$ = 7.18	$\bar{X}$ = 12.07
Nonhandicapped	$\bar{X}$ = 7.31	$\bar{X}$ = 9.00

Source	MS	df	F	p
Between subjects				
Error	88.9029	57		
Within subjects				
Group	125.3028	1	1.89	0.175
Error	66.2771	57		
Direction	629.3117	1	10.55	0.002
Error	59.6508	57		
Group X Direction	148.3199	1	4.41	0.040
Error	33.6465	57		

Note$_1$. N = 116

Note$_2$. MS (Error) for simple effects:

49.9618 (df = 103) Group effects at levels of Direction
46.64869 (df = 105) Direction effects at levels of Group

simple direction effects. The first WSD comparison was performed on the difference between handicapped children's ($\bar{X}$ = 7.18) and nonhandicapped children's ($\bar{X}$ = 7.31) initiations of interaction with adults. This difference did not exceed the WSD critical value. The second WSD comparison was performed on the difference between the number of interactions handicapped children ($\bar{X}$ = 12.07) and nonhandicapped children ($\bar{X}$ = 9.00) received from adults. This difference did not exceed the WSD critical value for the .01 level.

The results of the two-way analysis of variance and WSD comparisons are used to test Hypothesis 11 and Hypothesis 12.

Hypothesis 11. There will be no difference between the numbers of intervals in which handicapped children and nonhandicapped children initiate social interactions with adults.

The differences between the number of initiations for handicapped and nonhandicapped children failed to exceed the WSD critical value. The null hypothesis was accepted. The significant direction main effect demonstrates that both handicapped and nonhandicapped target children received ($\bar{X}$ = 10.54) more interactions than they initiated ($\bar{X}$ = 7.25) with adults.

Hypothesis 12. There will be no difference between the number of intervals in which handicapped and nonhandicapped children receive social interactions from adults.

The direction main effect did show that both handicapped and nonhandicapped children received more interactions than they initiated.

However, the difference between handicapped children's and nonhandicapped children's number of intervals or interactions received from adults was not significant at the .01 level. The null hypothesis was accepted.

Summary of Comparisons

This section presented the results of the analyses of variance and WSD comparisons used to test the 12 transactional hypotheses. A summary of these hypotheses is presented in Table 22. The failure to establish a consistent pattern of group differences between the social behaviors of handicapped and nonhandicapped children has important implications for the evaluation of social integration efforts and for the programmatic planning to promote social interaction. These implications will be discussed in Chapter VII.

The next section, antecedent characteristics related to social interaction, presents the results of stepwise regression analyses and correlations performed to meet the third objective of this research. This objective was to identify child, teacher, and program characteristics that contribute to the successful social integration of young handicapped children.

Antecedent Characteristics Related to Social Behavior

Overview of Methods

In this section, the results of the tests of the four antecedent questions are presented. A series of stepwise multiple regressions were performed to assess the extent to which differences in children's social behaviors could be explained by the program, teacher, and child

Table 22

Summary of Transactional Hypotheses

Hypothesis	Supported/Rejected
Child-child interactions	
1. There will be no difference between the numbers of intervals handicapped children and nonhandicapped children engage in active social interactions with their peers.	rejected
2. There will be no difference between the numbers of intervals handicapped children and nonhandicapped children spend in passive social interactions.	supported
3. There will be no difference between the number of intervals in which handicapped children and nonhandicapped children initiate social interactions with other children.	rejected
4. There will be no difference between the numbers of intervals in which handicapped children and nonhandicapped children receive social interactions from their peers.	supported
5. There will be no difference among the numbers of intervals nonhandicapped children interact with handicapped peers, nonhandicapped peers, and mixed groups of handicapped and nonhandicapped peers.	rejected
6. There will be no difference among the numbers of intervals handicapped children interact with handicapped peers, nonhandicapped peers, and mixed groups of handicapped and nonhandicapped peers.	rejected
7. There will be no difference between the numbers of intervals in which handicapped children and nonhandicapped children have positive interactions with their peers.	partially supported
8. There will be no difference between the numbers of intervals in which handicapped children and nonhandicapped children have negative interactions with their peers.	supported

Table 22 (continued)

Hypothesis	Supported/Rejected
9. There will be no difference between the handicapped children's and the nonhandicapped children's levels of social play.	partially supported
10. There will be no difference between the sizes of the play groups of handicapped children and nonhandicapped children.	supported
Child-adult interactions	
11. There will be no difference between the numbers of intervals in which handicapped children and nonhandicapped children initiate social interactions with adults.	supported
12. There will be no difference between the numbers of intervals in which handicapped children and nonhandicapped children receive social interactions from adults.	supported

characteristics. Separate regression analyses were performed on the handicapped and nonhandicapped target children's behaviors to compare the differential relationships their behaviors had to the antecedent characteristics.

Stepwise multiple regression analyses were conducted first separately using program characteristics, teacher characteristics, and child characteristics as the predictor or independent variables. The results of these analyses identified those characteristics within each characteristic domain that were the best predictors of the children's behaviors.

The program, teacher, and child characteristics that were the best predictors, then, were reentered as independent variables in a hierarchical stepwise regression analysis. The independent variables were entered in the following order based on the "Modifiability Index": program, teacher, and child characteristics.

Entry criteria for all regression analyses were set at F ratio of 2.0 and intercorrelation tolerance level of .50.

Selection of Dependent Variables

To reduce the number of regression analyses, two child-behavior measures were selected to represent the indices of social interactions. This selection was based upon the number of significant inter-behavior correlations. For both handicapped and nonhandicapped children the number of active social interactions (ACTIVE) and average level of social play (SOCIAL) were significantly intercorrelated with the greatest

numbers of positive social behaviors. The results of these correlations are presented in Table 23 and Table 24.

Program Characteristics

Predictors for ACTIVE. In the stepwise selection process for program characteristics related to differences in the handicapped children's active social interactions, only two independent variables met the specified entry criteria. These program-characteristic predictor variables were: the number of super play units and total number of children present. Table 25 presents the summary of this selection.

The F ratio, $F(2,51) = 5.23$, for these variables was significant at the .01 level although the R^2 was small (.17). The number of super play units accounted for the greatest R^2 change (.11), while the total number of children present contributed only .06 to the total R^2. The correlations of ACTIVE for handicapped children with number of super play units and total number of children present were -.04 and .20, respectively.

Two program-characteristic predictor variables met the specified criteria in the stepwise selection process. They were: the total number of children present and number of adults present. Table 25 presents the summary of this selection analysis.

The F ratio for the two variables, $F(2,51) = 5.26$, was significant at the .01 level. The R^2 was .17 with number of adults present contributing .11 and total number of children present adding only .06. The correlations of ACTIVE for nonhandicapped children were .25 with total number of children and -.19 with number of adults present.

Table 23

Correlations of Social Integration Measures and Average Levels of Social Play

Behaviors	Hand. children's average levels of social play	Nonhand. children's average levels of social play
Positive interaction with other children	.55**	.77**
Positive interaction with nonhandicapped children	.44**	.63**
Number of interactions initiated	.36**	.49**
Number of interactions received	.25*	.31**
Active social interactions	.52**	.79**
Average number of children	.48**	.04

Note. N = 116

* $p \leq .05$
** $p \leq .01$

Table 24

Correlations of Social Integration Measures and Active Social Interactions

Behaviors	Hand. children's active social interactions	Nonhand. children's active social interactions
Positive interactions with other children	.94**	.97**
Positive interaction with nonhandicapped children	.70**	.81**
Positive interaction with mixed groups of children	.31**	.43**
Interactions initiated	.74**	.70**
Interactions received	.25*	.39**

Note. N = 116

*$p \leq .05$
**$p \leq .01$

Table 25

Stepwise Regression to Select Program Characteristics Predictive of Children's Active Social Interaction

Variable	R^2	R^2 change	Coefficient	Standardized coefficient	F Value[a]
Handicapped children					
Number of super play units	.11	.11	-4.37	-0.37	8.09
Total number of children present	.17	.06	0.53	0.24	3.49
Variable not meeting entry criteria: Number of adults present					
Nonhandicapped children					
Total number of children present	.06	.06	1.66	0.41	8.26
Number of adults present	.17	.11	-5.46	-0.37	6.81
Variable not meeting entry criteria: Number of super play units					

[a]df(2,51)

For both handicapped and nonhandicapped children, program characteristics were able to account for approximately the same proportion of the variance, 17%. For handicapped children, the number of super units was negatively correlated to the number of active social interactions. This finding showed that handicapped children's levels of active social interaction decreased as the number of super play materials increased. For nonhandicapped children, the number of adults present was negatively correlated with the number of active social interactions. Nonhandicapped children had fewer active social interactions with peers as the number of adults in the classroom increased.

Predictors for SOCIAL. In the stepwise selection process for program characteristics related to handicapped children's average level of social play, three predictor variables met the entry criteria: total number of children present, number of complex play units, and number of barriers. Table 26 presents a summary of this selection.

The F ratio, $F(3,50) = 4.89$ was significant at the .01 level; the R^2 was .23. Number of barriers accounted for the greatest R^2 change (.08); but total number of children present and number of complex units both made contributions to the total R^2 of .07.

The correlations of SOCIAL for handicapped children were .27 with number of children present, .18 with number of complex play units, and -.18 with number of barriers.

The stepwise selection for program characteristics related to nonhandicapped children's average level of social play did not find predictors which met the entry criteria.

Table 26

Stepwise Regression to Select Program Characteristics Predictive of Average Levels of Social Play

Variable	R^2	R^2 change	Coefficient	Standardized coefficient	F value[a]
Handicapped children					
Total number of children present	.07	.07	0.86	.40	9.40
Number of complex play units	.14	.07	1.53	.34	6.56
Number of barriers	.23	.08	-1.06	-.30	5.52
Variables not meeting entry criteria: Number of multiplex play units Number of adults present					
Nonhandicapped children					

Note. Variables not meeting entry criteria:

Total number of children present
Number of adults present
Number of barriers
Number of complex play units
Number of multiplex play units

[a] df(3,50)

Although program characteristics were not related to nonhandicapped children's average level of social play, the three program characteristics: total number of children present, number of complex play units, and number of barriers, did account for 23% of the variance of handicapping children's average level of play. It appears that handicapped children's levels of social play are more highly related to program characteristics than are nonhandicapped children's levels of social play.

Antecedent Question 1. Are there differences in program characteristics which are correlated to levels of child behavior?

Of all the program characteristics selected in the analyses above, only one was statistically significant at the .01 level. This correlation was the number of super play units correlated with handicapped children's active social behavior. Program characteristics could only predict 17% of the variance of active social interactions.

Teacher Characteristics

Predictors of ACTIVE. In the stepwise selection for teacher characteristics for handicapped children's active social interaction, none of the predictors met the entry criteria.

Three teacher-characteristics predictor variables met the entry criteria of the stepwise selection procedure for teacher characteristics related to nonhandicapped children's levels of active social interaction. These were: teacher's attitude, teacher's experience, and teacher's training. Table 27 presents a summary of the selection analysis.

Table 27

Stepwise Regression to Select Teacher Characteristics Predictive of Children's Active Social Interactions

Variable[a]	R^2	R^2 change	Coefficient	Standardized coefficient	F value[a]
Handicapped children					
Variables not meeting entry criteria: Teacher's perceived competency; Teacher's attitudes; Teacher's experience; Teacher's training					
Nonhandicapped children					
Teacher's attitude	.11	.11	-2.19	-0.32	6.30
Teacher's training	.15	.04	4.66	0.25	3.64
Teacher's experience	.19	.04	-1.57	-0.22	2.78
Variable not meeting entry criteria: Teacher's perceived competency					

[a]df(3,50)

The F ratio, $F(3,50) = 4.05$, for the three teacher characteristics was significant at the .05 level; however, the R^2 only reached .19. Teacher's attitude accounted for the greatest proportion of the total R^2. The correlations of nonhandicapped children's average level of social play were: -.09 with teacher's attitudes, -.13 with teacher's experience, and .19 with teacher's training. These correlations are not significant at the .01 level.

Although teacher characteristics were not highly related to handicapped children's active social interactions, three teacher characteristics: teacher's attitude, teacher's experience, and teacher's training were able to account for 19% of the variance of nonhandicapped children's active social interactions. It appears that teacher characteristics were more highly related to the levels of active social interactions of nonhandicapped children than to those of handicapped children.

Predictors for SOCIAL. In the stepwise selection procedure, none of the teacher characteristic predictor variables met the entry level criteria.

From the selection process, two teacher-characteristic predictor variables met the criteria for entry: teacher's attitude and teacher's experience. The F ratio for these variables, $F(2,51) = 6.15$, was significant at the .01 level. The R^2 was .19. Teacher's attitude accounted for almost all of the total R^2, with a R^2 change of .16. The results of the selection procedure are summarized in Table 28. Of the correlations of nonhandicapped children's level of social play with

Table 28

Stepwise Regression to Select Teacher Characteristics Predictive of Average Levels of Social Play

Variable	R^2	R^2 change	Coefficient	Standardized coefficient	F value[a]
Handicapped children					
Variables not meeting entry criteria:					
Teacher's perceived competency					
Teacher's attitudes					
Teacher's experience					
Teacher's training					
Nonhandicapped children					
Teacher's attitudes	.16	.16	-1.61	-.39	9.45
Teacher's experience	.19	.03	-0.78	-.18	2.02
Variables not meeting entry criteria:					
Teacher's perceived competency					
Teacher's training					

[a] df(2,51)

teacher's attitude (r = -.40) and teacher's experience (r = -.21), only the first was significant at the .01 level.

Antecedent Question 1. Are there teacher characteristics that are associated with the child's level of social behavior?

From the results of the selection of teacher characteristics related to the levels of social play of handicapped and nonhandicapped children, it appears that teacher characteristics are more highly related to nonhandicapped children's levels of social play. Teacher's attitude and teacher's experience could account only for variance in the nonhandicapped children's average level of social play. These variables, however, could only predict 19% of the variance.

Child Characteristics

Predictors for ACTIVE. When child characteristics were entered into the stepwise selection procedure as predictor variables for handicapped children's active social interactions, only social competency and sex met the entry criteria. Their F ratio, $F(2,55)$ = 3.80, was significant at the .01 level, however, and the R^2 (.12) was very small. The summary of these results are found in Table 29. The correlations of handicapped children's active social interactions with social competency (r = .30) and sex (r = -.13) were not significant at the .01 level.

The two child-characteristic predictor variables that met the criteria of the stepwise selection procedure for nonhandicapped children's active social interactions were age and sex. For these variables, the F ratio, $F(2,55)$ = 3.49, was not significant at the .01 level and the R^2 was very small (.11). Table 29 presents a summary of

Table 29

Stepwise Regression to Select Child Characteristics Predictive of Active Social Interactions

Variable	R^2	R^2 change	Coefficient	Standardized coefficient	F value[a]
Handicapped children					
Child's social competency rating	.09	.09	1.29	0.33	6.61
Child sex	.12	.03	-4.44	-0.18	2.05
Variables not meeting entry criteria: Child's age; Child's birth order; Preschool experience; Child's Developmental Level					
Nonhandicapped children					
Child's age	.08	.08	0.63	0.33	6.26
Child's sex	.11	.03	-8.27	-0.19	2.02
Variables not meeting entry criteria: Child's birth order; Preschool experience; Child's social competency; Child's developmental level					

[a] df(2,55)

these results. The correlations of nonhandicapped children's active social interactions with age (r = .28) and sex (r = -.11) were not significant at the .01 level.

From the results of the stepwise selections of child characteristics related to children's active social interactions, child characteristics appeared to account for little or none of variance of active social interactions.

Predictors for SOCIAL. In the stepwise selection procedure for child-characteristic predictor variables for handicapped children's average level of social play, two variables, developmental level and sex, met the entry criterion. The F ratio, $F(2,55) = 4.43$), for these variables was significant at the .01 level; however, the R^2 (.14) was small. Neither the correlations of handicapped children's average level of social play with developmental level (r = .31) nor the correlations with sex (r = -.22) was significant at the .01 level. Table 30 presents a summary of the selection procedure.

Two child-characteristic predictor variables met the entry criteria in the stepwise selection procedure. These were the child's age and sex. However, the F ratio, $F(2,55) = 2.96$, for the two child characteristics failed to reach the .01 level of significance. The R^2 (.10) was extremely small. Neither the correlations of nonhandicapped children's average level of social play with age (r = .22) nor the correlations with sex (r = -.16) was significant at the .01 level.

From the results of the stepwise selections of child characteristics related to child's average levels of social play, child

Table 30

Stepwise Regression to Select Child Characteristics Predictive of Average Levels of Social Play

Variable	R^2	R^2 change	Coefficient	Standardized coefficient	F value[a]
Handicapped children					
Child's developmental level	.10	.10	1.24	.30	5.62
Child's sex	.14	.04	-4.63	-.20	2.52
Variables not meeting entry criteria: Child's age; Child's birth order; Preschool experience; Child's social competency					
Nonhandicapped children					
Child's age	.05	.05	0.32	.28	4.44
Child's sex	.10	.05	-6.00	-.02	2.84
Variables not meeting entry criteria: Child's birth order; Preschool experience; Child's social competency; Child's developmental level					

[a] df(2,55)

characteristics appeared to account for very little of the variance of children's average level of social play.

Antecedent Question 2. Are there differences in child characteristics that are correlated to levels of child behavior?

The correlations of (a) children's active social interaction with child characteristics selected as predictor variables and (b) children's average level of social play with child characteristics selected as predictor variables were not significant at the .01 level.

Regression Models

Overview. In the preceding sections: Program Characteristics, Teacher Characteristics, and Child Characteristics, the stepwise selections of the antecedent characteristics which were the best predictors of child behavior within each domain were identified. The antecedent characteristics identified were used as the across-domain independent or predictor variables in four separate hierarchical stepwise regression analyses.

The dependent variables in the four analyses were: (a) handicapped children's levels of active social interactions, (b) nonhandicapped children's levels of active social interactions, (c) handicapped children's average levels of social play, and (d) nonhandicapped children's average levels of social play. The order in which the across-domain antecedent characteristics were entered into the stepwise regression analyses was based on the "Modifiability Index" or ease in which the characteristics could be modified. The order specified was: (a) Program Characteristics, (b) Teacher Characteristics, and (c) Child Characteristics.

The results of these regression analyses were used to answer the antecedent question 3: "Are there differences in antecedent characteristics which are predictive of differences in the levels of child behaviors for handicapped and nonhandicapped children?"

Comparisons of the regression equations derived for: (a) handicapped children's level of active social interactions and nonhandicapped children's levels of active social interactions, and (b) handicapped children's average levels of social play and nonhandicapped children's average levels of social play were made. Two comparisons were made: (a) "Which variables entered the equations for handicapped and nonhandicapped children?" and (b) "When the same independent variables appeared in the regression equations for both handicapped and nonhandicapped children, were the magnitudes of the regression coefficients the same?" The results of these comparisons were also used to provide preliminary answers to the antecedent question 4: "Are there antecedent characteristics that are differentially related to the patterns of social behaviors of handicapped and nonhandicapped children?"

Models for levels of active social interactions. The results of the within-domain stepwise selections were used to identify the following predictor variables: (a) total number of children present, (b) number of adults present, (c) number of super play units, (d) teacher's attitude, (e) teacher's experience, (f) teacher's training, (g) child's social competency, (h) child's age, and (i) child's sex. These nine antecedent characteristics were used as the independent variables in the two hierarchical stepwise regression analyses performed separately on handicapped children's levels of active social interaction

and nonhandicapped children's levels of active social interactions. The results of these regression analyses are presented in the following two sections. A liberal and a conservative adjusted R^2 value are provided in Appendix G.

Table 31 presents the results of the hierarchical stepwise regression analysis for handicapped children's levels of active social interactions. Of the nine independent variables, only three (number of super play units, child's social competency, and total number of children present) met the entry criteria. The overall F ratio, $F(3,50) = 4.78$, was significant at the .01 level. The R^2 was .22.

The results of the hierarchical stepwise regression analysis for nonhandicapped children's levels of active social interactions are presented in Table 32. Of the nine independent variables, five variables (total number of children present, number of adults present, teacher's attitudes, teacher's training, and teacher's experience) met the entry criteria. The overall F ratio for this equation, $F(5,48) = 4.13$, was significant at the .01 level. The R^2 was .31.

Models for average levels of social play. The results of the within-domain stepwise selections identified the following predictors: (a) total number of children, (b) number of complex play units, (c) number of multiplex play units, (d) number of barriers, (e) number of adults present, (f) teacher's attitudes, (g) teacher's experience, (h) teacher's training, (i) child's developmental level, (j) child's age, and (k) child's sex. These eleven antecedent characteristics were used as the independent variables in two hierarchical stepwise regression analyses performed separately on handicapped children's average levels

Table 31

Stepwise Regression Model for Handicapped Children's Active Social Interactions

Variable	R^2	R^2 change	Coefficient	Standardized coefficient	F value[a]
Number of super play units	.07	.07	-3.67	-0.31	5.63
Child's social competency	.18	.11	0.90	0.24	3.40
Total number of children present	.22	.04	0.46	0.21	2.68

Variables not meeting entry criteria:

Number of adults
Teacher's attitudes
Teacher's experience
Teacher's training
Child's age
Child's sex

[a] df(3,50)

Table 32

Stepwise Regression Model for Nonhandicapped Children's Active Social Interactions

Variable	R^2	R^2 change	Coefficient	Standardized coefficient	F value[a]
Total number of children present	.04	.04	1.35	0.33	5.85
Number of adults present	.11	.07	-4.37	-0.30	4.58
Teacher's attitude	.21	.11	-1.80	-0.26	4.50
Teacher's training	.27	.04	4.31	0.23	3.39
Teacher's experience	.31	.04	-1.16	-0.16	1.64

Variables not meeting entry criteria:

Number of super play units
Child's age
Child's sex
Child's social competency

[a]df(5,48)

of social play and nonhandicapped children's average levels of social play. The results of these regression analyses are presented in two sections. A liberal and a conservative adjusted R^2 value are provided in Appendix G.

Table 33 presents the results of the hierarchical stepwise regression analysis for handicapped children's average levels of social play. Only five of the eleven independent variables met the entry criteria. These five variables were: total number of children, number of barriers, child's developmental level, number of complex play units, and number of multiplex play units. The regression equation formed by these variables had a overall F ratio, $F(5,48) = 4.32$, that was significant at the .01 level and R^2 of .31.

When the eleven antecedent characteristics were used as independent variables in the hierarchical stepwise regression analysis of nonhandicapped children's average levels of social play, only two, teacher's attitudes and teacher's experience, met the entry criteria. Table 34 provides a summary of the results of this regression analysis. This two-variable regression equation had a F ratio of, $F(3,51) = 6.15$. This F value was significant at the .01 level. The R^2 for this equation was .19.

Antecedent Question 3. Are there differences in program, teacher, and child characteristics that are predictive of differences in the levels of child behaviors for handicapped and nonhandicapped children?

The proportions of total child-behavior variance that were predicted by the four hierarchical regression models suggest a qualified yes answer to this question. The regression equations for predicting

Table 33

Stepwise Regression Model for Handicapped Children's Average Levels of Social Play

Variable	R^2	R^2 change	Coefficient	Standardized coefficient	F value[a]
Total number of children present	.07	.07	0.68	.32	5.75
Number of complex play units	.14	.07	1.56	.34	7.34
Child's developmental level	.18	.05	1.00	.24	3.69
Number of barriers	.23	.08	-0.79	-.22	2.97
Number of multiplex play units	.31	.03	1.69	.18	2.18

Variables not meeting entry criteria:

Number of adults present
Teacher's attitudes
Teacher's experience
Teacher's training
Child's age
Child's sex

[a]df(5,48)

Table 34

Stepwise Regression Model for Nonhandicapped Children's Average Levels of Social Play

Variable	R^2	R^2 change	Coefficient	Standardized coefficient	F value[a]
Teacher's attitude	.16	.16	-1.61	-0.39	9.45
Teacher's experience	.19	.03	-0.79	-0.18	2.02

Variables not meeting entry criteria:

Number of barriers
Number of complex play units
Number of multiplex play units
Total number of children present
Number of adults present
Teacher's training
Child's age
Child's sex
Child's developmental level

[a] df(2,51)

the levels of active social interactions accounted for 22% and 31% of the total child-behavior variance for handicapped children and nonhandicapped children, respectively. Based upon the knowledge of the antecedent characteristics in the regression equations, approximately one-fifth to one-third of the differences in children's levels of active social interactions could be predicted.

The prediction of differences in children's average levels of social play from the antecedent-characteristic regression equations was more powerful for handicapped children's social play behavior than for nonhandicapped children's social play behavior. The regression equation for predicting handicapped children's average levels of social play accounted for 31% of the total child-behavior variance, while the corresponding regression equation for differences in nonhandicapped children's average levels of social play accounted for only 19% of the total child-behavior variance. It does appear that there are differential predictors of handicapped and nonhandicapped children's social behaviors.

Although perfect prediction of levels of child behavior would not be achieved from only the knowledge of the levels of the antecedent characteristics of the program, the teacher and the child, the substantial proportions of the total child-behavior variances accounted for by these separate equations warranted an examination of the relative contributions of these sets of antecedent characteristics. This examination compared the differential relationship of specific program, teacher, and child characteristics to the patterns of handicapped and nonhandicapped children's social behaviors.

Antecedent Question 4. Are antecedent program, teacher, and child characteristics differentially related to the patterns of social behaviors of handicapped and nonhandicapped children?

To quantitatively compare the differential relationships of the qualitatively different models of predictor variables derived for handicapped children's and nonhandicapped children's levels of active social interactions, two comparisons were made. The set of predictor variables for handicapped children's levels of active social interactions (i.e., number of super play units, child's social competency, and total number of children present) were entered as predictors into separate fix-order regressions for handicapped children's and nonhandicapped children's levels of active social interactions. The interaction of the slopes of the resulting regression lines ($F = 141.78$, $df = 3,50$) was significant at the .01 level.

In the second comparison, the model of predictor variables for nonhandicapped children's levels of active social interaction (i.e., total number of children present, number of adults present, teacher's attitude, teacher's training, and teacher's experience) were entered into separate fix-order regressions for handicapped children's and nonhandicapped children's levels of active social interactions. The resulting comparison demonstrated a significant interaction of the regression lines at the .01 level ($F = 29.72$, $df = 5,48$).

The results of the above comparisons demonstrated that antecedent program, teacher, and child characteristics are differentially related to handicapped children's and nonhandicapped children's levels of active social interaction.

The same comparisons of the differential relationships of antecedent characteristics and handicapped children's and nonhandicapped children's levels of social play were made. The set of predictor variables for handicapped children's levels of social play (i.e., total number of children present, number of complex play units, child's developmental level, number of barriers, and number of multiplex play units) were entered as predictors in fix-order regressions for handicapped children's and nonhandicapped children's levels of social play. The interaction of the resulting slopes of these regression lines was significant at the .01 level ($F = 38.67$, $df = 5,48$). However, when the predictor variables from the model of nonhandicapped children's levels of social play (i.e., teacher's attitude and teacher's experience) were entered as independent variables in the fix-order regression, the interaction of regression lines was not significant at the .01 level ($F = 4.49$, $df = 2,51$).

The comparisons of the regression models for handicapped children's and nonhandicapped children's levels of active social interactions and average levels of social play demonstrated that handicapped children's and nonhandicapped children's social behaviors were related to qualitatively different constellations or sets of antecedent characteristics. While variations in program characteristics and child characteristics were predictive of differences in handicapped children's levels of active social interactions and average levels of social play, the differences on these social behavior measures for nonhandicapped children were predicted by variations in teacher characteristics.

Although the causal direction of the relationships cannot be determined from regression analysis, it is apparent that handicapped children's and nonhandicapped children's social behaviors are differentially related to antecedent program, teacher, and child characteristics. In addition to the different antecedent-behavior relationships for handicapped and nonhandicapped children, it appeared that differences in the two social behaviors, levels of active social interactions and average levels of social play, also were related to qualitatively different constellations of antecedent characteristics for both handicapped and nonhandicapped children.

Summary of Analyses

In this chapter, the results of three major areas of investigation were presented. These areas were: descriptive patterns of contextual characteristics, comparisons of handicapped and nonhandicapped children, and antecedent characteristics related to social interaction. In the first area, descriptions of the antecedent-program, teacher, and child characteristics of the 58 sample classes were provided in the forms of mean, ranges, and distributions of these characteristics. In the second area, the groups of handicapped and nonhandicapped target children were compared on the antecedent child characteristics of social competency and developmental level ratings and the transactional measures of social interaction with peers and teacher. Analyses of variance and Tukey WSD's were used to perform these comparisons. In the third area, a series of stepwise regression analyses were performed to establish the patterns of predictive relationships between constellations of the

antecedent program, teacher, and child characteristics and the two indices of social interaction.

In addition to the three major areas of investigation, the results of several secondary analyses were provided. These analyses included the validation of the two scales of the Teacher Questionnaire and the Social Competency Rating scale. The patterns of intercorrelation among several of the antecedent and transactional measures also were presented.

The summary and discussion of the results of the major areas of investigation are presented in the following chapter.

CHAPTER VI

DISCUSSION OF RESULTS

Overview

The discussion and interpretation of the results of this investigation are presented in four parts. The first section provides the description of the naturally occurring patterns of the antecedent program, teacher, and child characteristics. In the second section, the comparisons of the social interactions and play behaviors of the handicapped and nonhandicapped children are discussed and, when appropriate, these patterns are compared to the findings of earlier social integration research. Section three presents the results of the regression analyses used to identify clusters of antecedent characteristics predictive of child-behavior measures. Comparisons of the differential patterns of antecedent-transactional relationships for handicapped and nonhandicapped children are discussed in the final section.

Summary of Results

Before the discussion of the first section, an outline of conclusions is provided to summarize the results of the analyses of Chapter V. These conclusions, in the form of brief statements, follow the same organizational format presented in the overview above.

I. Descriptive Patterns of Contextual Characteristics

A. Program Characteristics

1. The sample of 58 early childhood education and day care classes was comprised of 42.1% basic classes, 47.4% integrated classes, and 10.5% special-needs classes.

2. The average total class enrollment was approximately 18 children ($\bar{X}$ = 17.89), but some classes had as few as six children or as many as 43 children.
3. The average number of handicapped children enrolled across the 58 classes was approximately four handicapped children ($\bar{X}$ = 4.25).
4. The total distribution of types of handicapped conditions of the handicapped children across the 58 classes paralleled the 1976 figures for the national Head Start enrollment of handicapped children.
5. The average number of adults present was approximately three ($\bar{X}$ = 3.24). The number of adults increased as the total class enrollment increased (r = .29) but did not increase substantially as the number of handicapped children increased (r = .17).
6. The variety of play materials tended to decrease as the total class enrollment increased (r = -.27).
7. Special-needs classes tended to have greater numbers of simple play units (r = .24) and fewer physical barriers (r = -.26) than either integrated or basic classes did.

B. Teacher Characteristics

1. Over one-half (53.7%) of the 54 teachers who returned the Teacher Questionnaire were in their first or second year of teaching in a developmentally integrated classroom.

2. Teachers' perception of their professional competency and their attitude towards mainstreaming, as measured by the Teacher Questionnaire, was not related to their training or teaching experience.
3. Teachers who had more favorable attitudes towards mainstreaming also perceived themselves as more competent in teaching in developmentally integrated classes (r = .28).

C. Child Characteristics

1. The two groups of handicapped children and nonhandicapped children were roughly equivalent on measures of chronological age and distribtion of boys and girls. The matching procedure used achieved comparability of the two groups on these dimensions.
2. The distribution of handicapped conditions within the subsample of handicapped children was similar to the distributions of the total number of handicapped children enrolled in the 58 classes and the national figures for Head Start enrollment. However, the subsample of handicapped children had relatively fewer children with speech impairments and greater numbers of children with physical impairments, mental retardation, and emotional disturbances.
3. There were no differences among the teacher ratings of developmental levels for handicapped children with different handicapping conditions. However, teachers'

ratings of social competency of children classified as mentally retarded and/or learning disabled (N = 8) were significantly lower than children's ratings in the low-incidence classification group. There were no other significant differences in the social competency ratings across the other classification groups.

4. As a group, handicapped children received significantly lower teacher ratings on social competency and developmental level than the group of nonhandicapped children.

II. Comparisons of Children's Behaviors

A. Child-Child Interactions

1. Nonhandicapped children engaged in more intervals of active social behaviors than did handicapped children.
2. The two groups did not differ significantly in the number of intervals they spent in passive social interactions.
3. Both handicapped children and nonhandicapped children had more intervals of passive social interactions than active social interactions.
4. Both handicapped and nonhandicapped children initiated more social interactions with their peers than they received from their peers. However, nonhandicapped children initiated significantly more social interactions with nonhandicapped peers than did handicapped children.
5. There were no differences between the two groups in the mean number of social interactions received from peers.

6. Both handicapped and nonhandicapped children have more intervals of positive social interactions than negative social interactions with their peers.
7. Both groups had more intervals of positive social interactions with nonhandicapped peers than with handicapped peers or mixed groups of handicapped and nonhandicapped peers.
8. Nonhandicapped children had a greater number of intervals of positive social interactions with nonhandicapped peers than did handicapped children; there were no differences in the number of intervals of positive social interactions with handicapped peers or mixed groups of peers for the two groups.
9. Nonhandicapped children had fewer intervals of negative social interactions with peers than did handicapped children. However, the two groups did not differ significantly in their number of negative interactions with peers.
10. Nonhandicapped children spent a greater proportion of their total number of intervals in associative play than did handicapped children. There were, however, no other significant differences in the two groups' proportions of intervals spent in other social play categories.
11. Both groups spent greater proportions of their total intervals in the social play categories of associative play, parallel play, and engaged with adult; the lowest

proportions of their intervals were spent in the unoccupied category.

12. There was no difference between the average numbers of children in the social play groups of handicapped and nonhandicapped target children.

B. Child-Adult Interactions

1. Both groups of children received more social interactions from adults than they initiated towards adults.

2. Although there was no difference in the numbers of social interactions with adults initiated by handicapped children and nonhandicapped target children, handicapped children received more interactions from adults than did nonhandicapped children. This difference, however, was not significant at the .01 level.

III. Antecedent Characteristics Related to Social Interaction

A. Two transactional child-behavior variables, numbers of active social interactions and average level of social play, were selected to represent the indices of social interaction. This selection was based upon the number of significant intercorrelations of these measures to the six remaining measures of positive social behavior.

B. Regression-analyses equations of selected antecedent characteristics could account for 22% of the total variance of handicapped children's levels of active social

interactions and 31% of the total variance of nonhandicapped children's levels of active social interactions.

C. Regression-analyses equations of selected antecedent characteristics for the average levels of social play of handicapped children and nonhandicapped children accounted for 31% and 19% of the total variances, respectively.

D. Different constellations of antecedent characteristics were related to the two child-behavior measures for both groups.

   1. Teacher characteristics were more highly related to the two child-behavior measures for nonhandicapped children than for handicapped children.

   2. Differences in handicapped children's behaviors were more highly related to differences in program characteristics and child characteristics than were differences in nonhandicapped children's behaviors.

Description of Antecedent Characteristics

The descriptions of the naturally occurring patterns of antecedent characteristics were presented for two reasons. First, they provided a representation of the current status of integrated early childhood programs serving handicapped children in central Pennsylvania. The similarities of these patterns to the national statistics collected from Head Start evaluations provided assessments of the external validity or generalizability of the results of this investigation to other samples of integrated classrooms. Secondly, these descriptive patterns reflected the wide ranges of variability in the antecedent characteristics of classrooms currently serving young handicapped children.

Although means were used to report what are typical patterns, the reader is reminded that these figures represent averages across 58 classrooms. Therefore, typical classroom patterns represented the normative class conditions and not actual or ideal class conditions.

Program Characteristics

The sample of 58 classrooms contained greater percentages of classes categorized as integrated and basic (i.e., less than 20% enrollment of handicapped children) classrooms. The relatively lower percentage of special-needs (i.e., 20-50% enrollment of handicapped children) classrooms included in the sample may be the result of two factors. The first factor was that relatively fewer early childhood programs in central Pennsylvania serve handicapped and nonhandicapped children on a 1:1 ratio. Reverse mainstreaming, in which the number of handicapped children equals or exceeds the number of nonhandicapped children, is not the most common strategy among early childhood education programs (Guralnick, 1976; Korn, 1974). The second factor was the high inclusion rate of Head Start programs. These Head Start programs, having been mandated to serve an enrollment of at least ten percent handicapped children, were most frequently identified and also eager to participate.

The author was concerned, at first, that the population of handicapped children in a sample comprised of predominantly basic and integrated classrooms would bias against the selection of target children with moderate or severe impairments. However, the similarities in the distributions of handicapping conditions across the 58 sample classrooms and the national Head Start enrollment support the

generalizability of the results to other integrated classes. Although the 58 classes sampled may not have served many profoundly or severely impaired children, these children may not be served currently in other comparable integrated settings. Further, in the subsample of handicapped children, the relatively larger percentages of children classified as physically impaired, mentally retarded, and emotionally disturbed, and the relatively lower percentage of children classified as speech impaired demonstrated the findings of this investigation also have implications to groups of children who may have potentially more difficulty in being assimilated into integrated classrooms (Bruininks & Kennedy, 1974; Ensher et al., 1977; Levitt & Coehn, 1976).

The class enrollment figures showed that handicapped children are being served within small classes with as few as six children and within large classes with as many as 43 children. The average number of children enrolled across the 58 classrooms was approximately 18; however, there was no significant relationship between the type of class and the total number of children enrolled. As the total number of children, increased, the ratio of handicapped children to nonhandicapped did not consistently decrease, as expected. Special-needs and integrated classes did have a tendency to serve fewer children, but the magnitude of the correlation was not significant. On the average, approximately four handicapped children were enrolled in a classroom.

As would be expected, the number of adults present in the classrooms increased as the total number of children enrolled increased. However, there was no consistent increase in the number of adults present as the number of handicapped children increased. These

relationships suggest that, although programs may increase their staff and number of parent volunteers to accommodate more children, they do not necessarily have additional adults to accommodate specifically the needs of handicapped children. The average ratio of adults to children was approximately 1:6.

Program characteristics of enrollment were also related to characteristics of the play materials and the arrangements of the classrooms. Contrary to what would have been expected, the variety of play units (i.e., number of different units) did not increase but rather consistently decreased as total class enrollment increased. This finding indicated that classrooms that had more children enrolled had fewer play units or materials for children to use.

In regression analyses, the total number of children in a class was shown to be related to higher levels of social interactions; this fact may in part be due to the necessity and the greater opportunity for children to use or share the fewer units that were present. This explanation is consistent with the findings of an earlier study (Johnson, 1935) which also demonstrated increases in social interactions when the number of play materials decreased.

Finally, classrooms that had greater percentages of handicapped children enrolled had more simple play units and fewer physical barriers than classrooms with relatively fewer handicapped children enrolled. In attempts to accommodate a broader range of individual differences among children, teachers and program directors may select play materials that are less complex and less demanding socially and cognitively. They may also make corresponding attempts to increase physical accessibility of

all the play areas in the classrooms by decreasing the number of physical barriers between areas.

Teacher Characteristics

Over one-half (53.7%) of the 54 teachers responding to the Teacher Questionnaire were in their first or second year of teaching experience in integrated classrooms. This finding may reflect the continual staff turn-overs that consistently trouble early childhood programs and also the only recent establishment of integrated classes in central Pennsylvania.

The relationships between teachers' perceptions, attitudes, amounts of training, and years of experience are consistent with those of early studies (Harasymiw & Horne, 1975; Shotel et al., 1972). Teacher's perceptions of their professional competency and attitudes towards mainstreaming were not significantly related to their levels of training or experience.

Pre-service and inservice training and actual teaching experience may not influence teachers' attitudes towards their own professional capabilities and attitudes towards mainstreaming. However, the relationship between teachers' perceived competency and attitudes towards mainstreaming suggested that teachers who felt more competent in teaching in integrated classes had more positive attitudes towards mainstreaming. If teachers' positive attitudes towards mainstreaming are critical to mainstreaming efforts (as suggested by Ensher et al., 1977; Haring et al., 1958; Wynne et al., 1975) more emphasis in pre-service and inservice training should be placed in helping teachers

perceive themselves as more competent. Affective objectives, such as realistic self-evaluations of teaching skills and effectiveness, may be necessary in training programs preparing teachers to work in integrated settings.

Child Characteristics

Although the groups of handicapped and nonhandicapped children were matched on the variables of chronological age and distribution of boys and girls, teachers consistently rated handicapped children significantly lower on measures of social competency and development capability.

The question of whether these rating differences reflect actual behavioral differences between the two groups or teachers' biases in evaluations cannot be specifically determined. However, the differences in the comparisons of the handicapped and nonhandicapped groups' levels on several social behaviors suggested that these differences in ratings are valid assessments of behavioral differences. Teachers' observations and ratings of specific social behaviors of children in the classroom may offer an additional source of child-screening and child-assessment information.

In the analyses of child characteristics among the handicapped group, it was determined that the groups of children with different handicapping conditions were sufficiently similar on measures of social competency and developmental levels. Therefore, they were treated as a single group in subsequent analyses.

Comparisons of Target Children's Behaviors

Child-child Interactions

The failure to find a consistent pattern of group differences in all the comparisons of handicapped and nonhandicapped children's social behaviors demonstrated the importance of including both quantitative and qualitative assessments of numerous social behaviors. Behavioral indices, rather than a single interaction or behavior, should be used to evaluate social integration. These indices must include measures of frequency, affect, direction, and partners of the social interactions in order to fully describe the patterns of social behaviors and play of handicapped and nonhandicapped children in early childhood classes.

In the general patterns of social behavior of handicapped children were similar to those of their nonhandicapped counterparts. Both groups of children: (a) had more intervals of passive interactions than active interactions, (b) initiated more social interactions than they received from peers, (c) had more intervals of positive interactions than negative interactions, (d) had more positive interactions with nonhandicapped peers than with handicapped or mixed groups of peers, and (e) received more interactions from adults than they initiated towards adults.

However, there were also important differences between the two groups. Although from the data it appeared that handicapped children were neither socially rejected nor isolated in their classrooms, it also seemed that they were to a degree less socially active than the nonhandicapped children. They engaged in fewer intervals of active social interactions with peers, initiated fewer interactions, and had

fewer intervals of positive interactions with nonhandicapped peers than did nonhandicapped target children.

In comparing the results of this investigation to findings of earlier studies, a similar pattern of inconsistencies emerged. Although low rates of across-group interactions among handicapped and nonhandicapped children have been frequently cited (e.g., Allen et al., 1972; Devonney et al., 1974; Karnes et al., 1970; Porter et al., 1978; Snyder et al., 1977), the data from this study support the findings to the effect that handicapped children are not rejected and do not receive fewer social interactions than their nonhandicapped peers (Peterson & Haralick, 1977). Unlike Karnes et al. (1978) and Porter et al. (1978), this study found, in addition, that both handicapped and nonhandicapped children had higher rates of positive interactions with nonhandicapped peers, thus suggesting that both groups preferred nonhandicapped playmates.

These differences may in part be due to the differences in the numbers of children present in the classrooms across this study and the smaller classes in earlier research studies. The results of the regression analyses indicate that handicapped children's levels of active social interactions and social play both increased as the number of children present increased. Increasing the number of children present may increase the opportunities handicapped children will have to interact with nonhandicapped classmates and the probabilities handicapped children will select a nonhandicapped child as a playmate.

The results of this investigation, however, also partially supported earlier studies in finding low rates of negative social

behaviors for handicapped children (Porter et al., 1978) and greater proportions of time spent in higher levels of play for nonhandicapped children (Devonney et al., 1974; Peterson & Haralick, 1977).

Child-adult Interactions

An earlier study (Porter et al., 1978) concluded that handicapped and nonhandicapped children did not differ in their rates of interactions with adults in an early childhood class setting. The results of this investigation supported this finding. There was no difference in the number of interactions with adults initiated by handicapped and nonhandicapped children and handicapped children did not receive more interactions from adults than did nonhandicapped children. Like teachers in the experimental classroom (Porter et al., 1978), teachers, aides, and volunteers in field-setting classes may attempt to frequently engage children in social interactions.

In an earlier discussion, the contradictory effects of teacher interactions were shown to both increase and decrease children's social interactions with their peers. Although a functional analysis of adult behaviors cannot be made from the data of this study, it appears that, as the numbers of interactions the handicapped children received from adults increased, their levels of social play decreased ($r = -.69$) and the number of interactions they received from peers decreased ($r = -.31$). This finding replicates that of Harris (1976). Harris's study would suggest that teachers' frequent social contacts with handicapped children are restraining and not always beneficial to the child. The findings of this study and the Harris study suggest that adults in integrated early childhood classes must carefully monitor the effects of

their own behavior patterns upon the children's social behaviors. Excessive interactions initiated by adults may actually work against the handicapped children's attainment of social interactions and acceptance among peers.

Antecedent Characteristics Related to Social Behavior

Having previously established the importance of using multiple social integration indices, two behaviors were selected to represent the eight positive social interaction behaviors. These were: children's levels of active social interactions and average levels of social play. These two behavioral measures were selected because both measures were highly correlated with the six remaining indices and together presented both a quantitative and qualitative assessment of a child's social behavior pattern.

Stepwise multiple regression analyses were performed to determine the relationships among differences in the antecedent program, teacher, and child characteristics, and differences in child-behavior measures across the 58 classrooms. The resulting constellations of predictive antecedent-characteristics were not the same for handicapped and nonhandicapped target children. Similarly, the resulting constellations of predictive antecedent characteristics for levels of active social interactions and average levels of social play were not the same for either target group.

The results of these regression analyses are summarized by describing the antecedent conditions which were related to higher levels of target children's social behaviors.

Handicapped children had higher levels of active social interactions: (a) in classrooms with fewer super play units, (b) when there were more children present in the classroom, and (c) when the child was rated as more socially competent by the teacher.

Nonhandicapped children had higher levels of active social interactions: (a) when there were more children present in the classroom, (b) when there were fewer adults present, (c) in classrooms where teachers had less positive attitudes towards mainstreaming, (d) in classrooms where the teachers had more training, and (e) in classrooms where the teachers had less experience.

Handicapped children had higher average levels of social play in classrooms: (a) where more children were present, (b) with more complex and multiplex play units, (c) with few barriers between play areas, and (d) when the child was rated as developmentally higher by the teacher.

Nonhandicapped children had higher average levels of social play in classrooms (a) where teachers had less positive attitudes towards mainstreaming, and (b) where teachers had less teaching experience.

From these analyses it appears that different program characteristics may influence the social behaviors of handicapped children to a greater extent than the social behaviors of nonhandicapped children. Whether handicapped children's social behaviors can be manipulated by systematically varying play materials and room arrangements cannot be determined by these correlational data. However, it would appear that differences in handicapped children's social behaviors were related to differences in both the physical and social environments of the early childhood classes.

For the handicapped children, it seems that teacher ratings of social competency and developmental level are residual variables much like chronological age. These teacher ratings, both highly correlated with age, may represent indices of children's previous social experiences and behavioral competency. As antecedent characteristics which are less easily modifiable, these residual variables may also represent the conditional limitations of intervention programs directed to increase levels of social behaviors.

The negative relationships among nonhandicapped children's levels of social behaviors and the teacher characteristics of attitudes and experience are not easily interpreted. A third intervening variable, teacher's behavior, was not directly assessed in this study. The manner in which teachers' attitudes toward mainstreaming and teachers' experience are related to their behaviors with the children in their classrooms must be determined in future studies.

With the limitations of the present investigation, these relationships, unfortunately, can only be speculated. It does appear consistent with the present data that teachers may intrude and distract nonhandicapped children from interaction with peers. However, this assumption can only be partially supported. The negative correlation between nonhandicapped children's levels of active social behavior and their number of interactions with adults (r = .50) was significant at the .001 level.

Conclusion

The summary of the preceding discussion of the results provided the preliminary answers to five research questions. First, the results

of this study demonstrated that handicapped children enrolled in developmentally integrated early education classes were socially, as well as physically, integrated with their nonhandicapped peers. Although the handicapped children observed were not isolated or rejected in these classes, the data comparing their social behaviors to those of their nonhandicapped counterparts indicated that handicapped children took less active parts in social encounters with their peers.

Secondly, certain antecedent child characteristics were related to handicapped children's social interactions. These independent variables were teachers' ratings of children's social competency and developmental levels. Handicapped children who were rated as more socially and developmentally competent by teachers also exhibited higher levels of social interactions with their peers and higher average levels of social play.

Differences in teacher characteristics were not predictive of levels of handicapped children's social behavior, although teachers' attitudes towards mainstreaming and teachers' experience were related to levels of nonhandicapped children's levels of active social interactions and average levels of play. The explanation of this relationship must be withheld until an assessment of intervening variables such as the relationships of teachers' attitudes and teachers' experience to teachers' behaviors is made.

Certain play materials and classroom arrangements were related to handicapped children's levels of social play. In classrooms with fewer super play units, handicapped target children had higher levels of active social interactions with their peers. Handicapped target

children also had higher average levels of social play in classrooms with more complex and multiplex play units and fewer physical barriers.

Finally, the program characteristics that were related to the levels of social interactions of nonhandicapped children did not have the same effects upon the levels of social interactions of handicapped children. Handicapped children's levels of social interactions were more highly related to differences in program characteristics than were the levels of social interactions of nonhandicapped children. The research and applied implications of this difference to the promotion of social integration are discussed in Chapter VII.

CHAPTER VII

IMPLICATIONS

The previous discussion of the results of the present study demonstrated that it is possible to isolate constellations or sets of antecedent program characteristics that have potential for increasing the success of social integration within developmentally integrated early childhood programs. The natural variations of these program characteristics across the 58 classes were predictive to a degree of differences in handicapped children's levels of active social interactions and social play. Program characteristics are more easily and inexpensively modified than are teacher characteristics or child characteristics. If adaptations in these physical and social contexts of developmentally integrated early childhood classes are found to promote or enhance social integration, either independently or in combination with other procedural interventions, environmental intervention strategies may represent cost-effective alternatives to direct, individual behavioral strategies.

Although the correlational nature of the relationships between antecedent characteristics and transactional child behaviors in this study precludes causal interpretations, the results do make two significant contributions to the current status of social integration research and early integration practices. First, the demonstration of antecedent-transactional relationships has identified three critically needed areas for future research. These areas are: (a) the demonstration of functional relationships between manipulations of antecedent program characteristics and changes in children's social behavior

patterns; (b) the exploration of behavior covariations among children's patterns of behaviors; and (c) the extended examination of the long-range consequences of increasing children's early social interactions. Secondly, the antecedent-transactional relationships found in the present study do offer some tentative recommendations for the organization of developmentally integrated early childhood programs.

Areas for Future Research

Functional Relationships

The results of this investigation have identified two constellations of antecedent program characteristics which were associated with differences in handicapped children's levels of active social interactions and social play. However, before effective environmental strategies to promote social integration can be developed, the causal relationships between these program characteristics and handicapped children's transactional social behaviors must be established. These physical and social contextual characteristics must be systematically manipulated, first individually and then as constellations, while levels of handicapped children's social behaviors are monitored.

From the results of this study, it appears that the two behavioral measures of handicapped children's interactions and play were not equally related to the same constellations of program characteristics. Further, the magnitude of total child-behavior variance accounted for in the regression analyses were not sufficient to indicate that the behaviors of all the handicapped children were equally related to the identified antecedent constellations. These results suggest that one environmental intervention strategy may not be effective in increasing

all the behavioral indices of social integration for all children. Therefore, multiple environmental arrangements, either simultaneously or sequentially applied, may be necessary to promote the full social integration of young handicapped children. These issues must be fully resolved through individual analyses of the functional properties of antecedent program characteristics before effective prescriptions of environmental interventions can be applied to early integration efforts.

Behavior Covariation

Within the present investigation, it was demonstrated that the eight positive social behaviors constituting the indices of social integration of handicapped and nonhandicapped children were highly intercorrelated. The question, however, remains--If one or more of these behaviors were to be systematically increased, would there be a subsequent increase in the remaining social integration indices and/or other aspects of the child's behavior repertoire?

Several behavioral researchers have demonstrated the side effects to increasing handicapped children's positive social behaviors are increasing the frequency of social interactions (Strain, Shores, & Kerr, 1976) and decreasing the rates of negative and inappropriate behaviors (Allen et al., 1964). However, before the eight indices of social integration are thought of as a single response class, it must be demonstrated that they are functionally related to the same stimulus or constellation of stimuli. The individual functional analyses discussed in the previous section must be expanded to include multiple baseline designs which allow for the simultaneous monitoring of the correlated measures.

In addition to the response-response relationships among the indices of social integration, a second area of behavior covariation research must be developed. This area must examine the interrelationships among measures of handicapped children's social and educational participation in integrated classrooms. The environmental conditions which maximize the probabilities of children's social interactions may be less conducive to the promotion of cognitive and educational goals (Bieler, 1976). Although environmental interventions to promote social interaction can be developed, they should not be applied if they reduce or otherwise detrimentally affect the children's educational integration or participation. Evaluations of these environmental intervention strategies should include assessments of the total behavior patterns of handicapped children's participation in early childhood programs.

Long-range Outcomes

Finally, research is clearly needed to demonstrate that increasing handicapped children's early social interactions will ultimately lead to the achievement of the goals of integration. These goals were: (a) the prevention of secondary handicaps that result from social isolation and rejection; and (b) the preparations for future educational placement and community life. Longitudinal evaluations of the maintenance of social skills which follow handicapped children from early childhood programs to elementary and secondary school and through adulthood will be the final criteria for determining the success of integration efforts initiated in early childhood education classes.

Recommendations for Integrated Programs

While clearly further research is needed, the results of this study can be used, in the interim, to make tentative recommendations to early childhood educators and programs now facing the integration of handicapped children. These recommendations fall into three program areas: the role of the teacher, the physical environment, and the enrollment in the classroom. With these recommendations, go also strong encouragements to the program directors and classroom teachers to monitor carefully the levels of handicapped and nonhandicapped children's behaviors. These field-initiated evaluations would provide formative evaluation information of the effectiveness of program modifications, as well as measures of program accountability to document compliance with Federal and state education guidelines.

The present study demonstrated that different constellations of antecedent characteristics were associated with the levels of handicapped children's and nonhandicapped children's social behaviors. These results suggest that modifications to programs' physical and social contexts designed to increase handicapped children's levels of social interactions and social play could be implemented without detrimental effects to nonhandicapped children.

The Teacher

This investigation supports earlier studies in identifying the role of the teacher as a critical factor in the success of social integration. The teachers, either directly through their behaviors or indirectly through the arrangement of the classroom, are responsible for establishing and maintaining the handicapped children's social

interactions with their peers. Although the precise role of the teacher cannot be clearly defined, the results of the study do offer the two following recommendations:

1. Training to prepare teachers for instructing in integrated early childhood classes should include affective objectives and methods to achieve positive self-evaluations of their professional competency. Measures should be developed and implemented whereby teachers can assess their impact and success of their instructional and guidance methods with both handicapped and nonhandicapped children. Such measures may include informal behavior observations and checklists to document the children's progress towards the objectives and goals of social and cognitive development.

2. Teachers' social interactions with children during free play should be utilized to systematically reinforce peer interactions. By refraining from excessive levels of direct interactions with the children during these free-play situations, teachers can utilize these times for observations of peer-peer interactions and children's levels of social development. The teacher directly (and indirectly, as a model for teacher aides and volunteers) should focus upon the facilitation and encouragement of early peer interactions and group social play rather than directing and participating in the children's self-selected social activities.

The Physical Environment

Two characteristics of the physical environment of the classroom were associated with the levels of handicapped children's social behaviors. These characteristics were the arrangement of the physical

space (i.e., number of barriers separating play areas) and the types of available play materials. Based upon the levels of these characteristics associated with higher levels of handicapped children's social interactions and social play, the following suggestions are made:

1. Teachers should minimize the number of physical and visual partitions dividing the play areas. An alternative strategy to provide boundaries between play areas is the use of different floor coverings in the play areas (i.e., differently colored rugs or tiles). This strategy does not impair handicapped children's visual or physical access to their classmates while still providing clear distinctions between different behavior or activity areas.

2. Teachers may wish to select play materials or toys for free-play situations which can be used by one or more children at the same time. These play units may also be created by combining materials and toys, such as clay with cookie-cutters, blocks with trucks, and the like. However, there appears to be limits on the numbers of materials that should be combined. Increasing the number of super units (those combinations of play materials that have more than two uses) tended to decrease handicapped children's levels of social interaction.

The Class Enrollment

Finally, both handicapped and nonhandicapped children appeared to engage in higher levels of social interactions in classes which had larger enrollments. Handicapped children also tended to show higher levels of social play when more children were present in the classrooms. Although these results cannot suggest the optimal number of children, there are indications programs may consider increasing rather than

limiting their total enrollments within the limits established by licensing requirements and available staff and physical space to facilitate social integration.

Summary

The present research effort has indicated the possibilities of isolating and manipulating the characteristics and conditions of early childhood education and day care classes to increase the potential success of early integration efforts. The data also suggest that, although handicapped children currently enrolled in 58 early childhood classes are not socially rejected or isolated, there are quantitative differences in their levels of social behavior that differentiate them from their nonhandicapped classmates. Areas of future research and field-initiated evaluations of environmental strategies to increase young handicapped children's levels of social behaviors were presented. In addition, recommendations for the cautious application of the present results were also provided.

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APPENDIX A:

EXAMPLE CONTACT LETTERS AND RELEASE FORMS

THE PENNSYLVANIA STATE UNIVERSITY
COLLEGE OF HUMAN DEVELOPMENT
UNIVERSITY PARK, PENNSYLVANIA 16802

169

Division of Individual and Family Studies
S-110 Henderson Human Development Building

Area Code 814
863-0092

Dear

As part of a research project exploring the factors which promote the social interaction and development of young children in early childhood programs, we are attempting to locate and to contact those programs with classrooms serving both handicapped and nonhandicapped children. Your program has been suggested to our project staff.

Enclosed is a description of the entire study to give you a broader understanding of the issues we wish to study, and the methods which we will use in this study. To gather information, participating classrooms will be asked to allow a member of our staff to make only one visit. On this visit she will be making a 30-minute observation of the children during free play activities, observing the physical environment of the classroom, and conducting a 30-minute interview with the class teacher. A more detailed description of the visit is included under the Data Collection section of the enclosed project description.

We are asking approximately sixty classrooms across central Pennsylvania to take part in our study, and hope that your classroom(s) will be among them. Please indicate your interest in participating by mailing back the enclosed postcard. Please understand that by answering this form you are not committing your program or teachers to participate in the study. The return of this card will allow us to identify those programs which have classrooms serving both handicapped and nonhandicapped children and that also may be interested in taking part.

If you have indicated that you may be interested, I will recontact you within the next two weeks. If you have indicated that you are not interested in taking part in the study at this time, you will not be recontacted. However, if you should wish to participate at a later date, please feel free to contact me.

Thank you for your cooperation
and assistance,

Enclosure

Endorsed by Dr. Donald L. Peters

THE PENNSYLVANIA STATE UNIVERSITY
COLLEGE OF HUMAN DEVELOPMENT
UNIVERSITY PARK, PENNSYLVANIA 16802

Division of Individual and Family Studies
S-110 Henderson Human Development Building

Area Code 814
863-0092

Dear

I first would like to thank you for your cooperation and willingness to consider taking part in the research study I described in my earlier letter. I will look forward to talking with you and having the opportunity to meet with the teachers of your program.

Unfortunately, due to fiscal constraints, time limitations and unpredictable weather conditions; I will not be able to meet with each teacher personally to invite him/her to participate in the study as I would have liked. I will have to do this either by telephone or through the mail. However, before initiating this procedure, I would like to discuss in detail the project with you.

I will be recontacting by telephone the directors of the many participating programs in the beginning of February. At this time I'll answer any questions you or your teachers may have about the study and discuss the ways the teachers of your program should be contacted by our staff.

In the meantime, it would be extremely helpful to us if you could take a few minutes to fill out the enclosed Program Information Form. Please list the addresses or locations, the telephone numbers, and the names of the head teachers for each of your classes serving both handicapped and nonhandicapped children. With this information we will be ready to contact each individual classroom after I have discussed the procedures with you.

Again, thank you for your cooperation and assistance. I'll look forward to talking with you in February.

Sincerely,

Carol Wegley Brown

Enclosure

Endorsed by Dr. Donald L. Peters
Associate Professor of Human Development

THE PENNSYLVANIA STATE UNIVERSITY
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I want to thank you again for agreeing to take part in our study of social interaction. We have enclosed the consent forms for both the parents of the children we selected as target children and the head teacher(s) in each classroom.

The easiest way to get the forms to the parents would be to ask them to sign the forms when they bring their child to the classroom. Or you may send the forms home with the target children. When the parents have signed and returned these forms, please fill out and drop the enclosed postcard in the mail.

The second set of forms include the Teacher Questionnaire and the Child Information Forms. These should both be completed by the teacher. Knowing how busy a teacher's day can be, we thought it would be helpful to send these forms ahead of the day of our visit. Please answer all the questions on the Teacher Questionnaire and each Child Information Form. The children you are rating are our target children; their code numbers are:

We will be visiting your classroom on _____. When the observer arrives, she will need teacher's assistance in identifying the target children present and also the other handicapped members of the class. We requested that the nontarget children not be identified by name. After this is done, the observer will be able to make her observations and you will be free to proceed as if she were not there.

Before the observer leaves, she will be happy to answer any questions you may have and talk to you about the study. She will also pick up the consent forms and questionnaires.

We hope we have designed our visit and procedures to make them as easy on you as possible. We sincerely appreciate your interest and cooperation that makes our study possible.

THE PENNSYLVANIA STATE UNIVERSITY
COLLEGE OF HUMAN DEVELOPMENT
UNIVERSITY PARK, PENNSYLVANIA 16802

Division of Individual and Family Studies
S-110 Henderson Human Development Building

Area Code 814
863-0092

I want to thank you again for agreeing to take part in our study of social interaction. We have enclosed the consent forms for both the parents of the children we selected as target children and the head teacher(s) in each classroom.

The easiest way to get the forms to the parents would be to ask them to sign the forms when they bring their child to the classroom. Or you may send the forms home with the target children. When the parents have signed and returned these forms, please fill out and drop the enclosed postcard in the mail.

The second set of forms include the Teacher Questionnaire and the Child Information Forms. These should both be completed by the teacher. Knowing how busy a teacher's day can be, we thought it would be helpful to send these forms ahead of the day of our visit. Please answer all the questions on the Teacher Questionnaire and each Child Information Form. The children you are rating are our target children; their code numbers are:

We will be visiting your classroom on _____. When the observer arrives, she will need teacher's assistance in identifying the target children present and also the other handicapped members of the class. We request that the nontarget children not be identified by name. After this is done, the observer will be able to make her observations and you will be free to proceed as if she were not there.

Before the observer leaves, she will be happy to answer any questions you may have and talk to you about the study. She will also pick up the consent forms and questionnaires.

We hope we have designed our visit and procedures to make them as easy on you as possible. We sincerely appreciate your interest and cooperation that makes our study possible.

When we complete this phase of our project at the end of June, we would like to share the results and our insights with you. We will be mailing these findings to you at the current address of your classroom.

Thank you for your assistance,

Carol Wegley Brown

Enclosures

INFORMED CONSENT FORM

The Pennsylvania State University

Title of Study: A naturalistic study of the conditions and characteristics promoting social interaction in early childhood classes.

Investigators: Dr. Donald L. Peters, Associate Professor of Human Development

Carol Wegley Brown, M.S., Graduate Student

Date: October 10, 1978

I, _____, hereby agree to participate in this study that is an authorized part of the educational and research program of The Pennsylvania State University, under the supervision of Dr. Donald L. Peters.

The investigation and my part in the study have been fully explained to me by _____ and I understand her descriptions. The procedures of this study are described on the back of this form, and have been discussed in detail with me. I have been given an opportunity to ask whatever questions I may have and all my questions have been answered to my satisfaction.

I understand that I am free to refuse to answer any specific items or questions in interview or on questionnaires. I also understand that all information will remain confidential with regard to my identity and the identify of my classroom.

I FURTHER UNDERSTAND THAT I AM FREE TO WITHDRAW MY CONSENT AND TERMINATE MY PARTICIPATION AT ANY TIME.

_____ _____

Date Teacher's Signature

I, the undersigned, have defined and fully explained the investigation to the above participant.

_____ _____

Date Investigator's Signature

I was present when the above was explained to the teacher in detail and to my best knowledge it was understood.

_____ _____

Date Witness

EXPLANATION OF THE STUDY

This research is a naturalistic study of the social interaction and play behaviors in early childhood programs serving young children. The two purposes of this study are to describe the patterns of social interaction and social play in the early childhood program classes and to identify the conditions and factors which promote social interaction.

The information about the programs and children will be gathered in three ways: (1) observation of the children's behaviors during play, (2) teacher's reports and records, and (3) teacher's interview and questionnaires. Since we are interested in studying classrooms, the confidentiality of the children, teachers, and classes will be maintained by assigning them an arbitrary code number. The identity code list of the individual children and teachers will be destroyed at the end of the study.

The thirty-minute observation of children's social and play behavior will take place in their classroom during regularly scheduled play activities. During this observation, our staff will not interfere with the normal class routine.

The teacher interview and questionnaire takes about thirty minutes. During these interviews and questionnaires the teacher will be asked about the behavior and development of the children in her class and her experience and feelings about early childhood education.

The results of this study will help us identify the conditions and characteristics of early childhood classes which seem to promote positive social interaction. This information can be applied to the development of future educational programs for young children.

Teacher's Signature	Date	Investigator's Signature

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Dear

As part of a study of the social development and social behaviors of young children, our project staff will be visiting your child's classroom. During this visit our staff member will be observing the children while they play and will be talking to the teacher.

For our study we will be gathering information about the children and the conditions in the classrooms. We will be visiting many different programs, so we will not be able to observe all the children in each class. We randomly select only two children from each class. Your child's name has been drawn for his(her) class, so we would like your permission to include him(her) in our study. The attached form is provided for your written permission. After you have read it, please sign both the front and back of the consent form and return it to

All the information about your child will be coded with an arbitrary number. We do this to make sure all information will be confidential.

If you should have any questions, or want to know more information about our study, please feel free to contact our staff through your child's teacher.

Thank you,

Carol Wegley Brown

Attachment

Endorsed by Dr. Donald L. Peters

INFORMED CONSENT FORM

The Pennsylvania State University

Title of Study: A naturalistic study of the conditions and characteristics promoting social interaction in early childhood classes.

Investigators: Dr. Donald L. Peters, Associate Professor of Human Development

Carol Wegley Brown, M.S., Graduate Student in Human Development

Date: October 10, 1978

I, _____, hereby give my permission to have my child take part in a study which is an authorized part of the educational and research program of The Pennsylvania State University under the supervision of Dr. Donald L. Peters.

The study and my child's part in the study has been described and fully explained to me by _____ and I understand the explanation. The procedures of this study are described on the back of this form and explained the study to me. I have had an opportunity to ask whatever questions I may have had and all my questions have been answered.

I understand that I am free to withhold any answers to specific items or questions in the teacher's interview or report. I also understand that all information or answers to questions about my child and his/her identity will remain confidential.

I FURTHER UNDERSTAND THAT I AM FREE TO WITHDRAW MY CONSENT AND END MY CHILD'S PARTICIPATION AT ANY TIME.

_____ _____

DATE CHILD'S NAME

I hereby consent to the participation of _____ a minor, as a participant in the study described.

_____ _____

DATE SIGNATURE OF PARENT OR GUARDIAN

I, the undersigned, have defined and fully explained the investigation to the above subject.

_____ _____

DATE TEACHER'S SIGNATURE

_____

INVESTIGATOR'S SIGNATURE

EXPLANATION OF THE STUDY

This research is a study of the social interaction and play behaviors in early childhood education programs. The two purposes of this study are to describ the patterns of social interaction and social play in the early education classes and to identify the conditions and factors which promote social interaction.

The information about the program and children will be gathered in three ways: (1) observations of the children's behaviors during play, (2) teacher's reports and records, and (3) teacher's interview and questionnaires. Since we are interested in studying classrooms, the confidentiality of the children, teachers and classes will be maintained by assigning them an arbitrary code number. The identity code list of the individual children and teachers will be destroyed at the end of the study.

The thirty-minute observation of children's social and play behavior will take place in their classroom during regularly scheduled play activities. During this observation, our staff will not interfere with the normal class routine.

The teacher interview and questionnaire takes about thirty minutes. During these interviews and questionnaires the teacher will be asked about the behavior and development of the children in her class and her experience and feelings about early childhood education.

The results of this study will help us identify the conditions and characteristics of early childhood programs which seem to promote positive social interaction. This information can be applied to the development of future educational programs for young children.

_____ _____

SIGNATURE OF MINOR SUBJECT'S PARENT OR GUARDIAN

DATE

_____

INVESTIGATOR'S SIGNATURE

APPENDIX B:

DISTRIBUTIONS OF CHILD CHARACTERISTICS

Distribution of Children on Child Characteristics

Characteristic	Number of Handicapped Children		Number of Nonhandicapped Children	
Age: 36-40 mos.	3		4	
41-45 mos.	5	$\bar{X}$ = 53.19 mos.	3	$\bar{X}$ = 53.59 mos.
46-50 mos.	7		11	
51-55 mos.	13		6	
56-60 mos.	22		19	
61-65 mos.	8		15	
	58			
Preschool experience:				
yes	19		16	
no	39		42	
	58		58	
Birth order:				
only child	17		13	
first	13		15	
second	14		14	
third	7		11	
fourth	2		2	
fifth	2		3	
sixth	2		-	
eleventh	1		-	
	58		58	

APPENDIX C:

EXAMPLE OF CHILD BEHAVIOR CODE SHEET

CHILD BEHAVIOR OBSERVATION SHEET

Observer _____ Class ID: _____ Target child A _____
Target child B _____

Date _____ Time _____

Number of handicapped children _____ Number of Adults _____
Total number of children _____

| | | |

APPENDIX D:

THE TEACHER QUESTIONNAIRE

Date _____ Class ID# _____

Teacher Questionnaire

1. How many children currently are enrolled in your class? _____

2. Have any of these children been identified as being handicapped? (Please list the type of disabilities and the number of children who have that disability.)

Type of handicapping conditions	Number of children
_____	_____
_____	_____
_____	_____
_____	_____

3. How many teachers and/or aides do you have in your classroom? _____

4. How many years have you taught in a class with at least one handicapped child? _____

5. Have you attended any special classes or in-service training on teaching in classes with both handicapped and nonhandicapped children? _____

   Please list _____

   _____

   _____

The following statements represent some beliefs and attitudes towards teaching in classes with handicapped and nonhandicapped children. None of these statements are right or wrong, but show the great number of different feelings and attitudes held by teachers. Please indicate your agreement or disagreement with the statements by circling the number which best represents your feelings or beliefs.

1. I feel equally successful as a teacher with the handicapped and nonhandicapped children in my class.

1	2	3	4	5
Strongly Disagree	Disagree	Uncertain	Agree	Strongly Agree

2. I have no more difficulty in planning activities and lessons for the handicapped children than I do for the nonhandicapped children in my class.

1	2	3	4	5
Strongly Disagree	Disagree	Uncertain	Agree	Strongly Agree

3. I have more difficulty in the management of the behavior problems of the handicapped children than the nonhandicapped children in my class.

1	2	3	4	5
Strongly Disagree	Disagree	Uncertain	Agree	Strongly Agree

4. I feel I have enough training and/or experience to teach handicapped children.

1	2	3	4	5
Strongly Disagree	Disagree	Uncertain	Agree	Strongly Agree

5. I feel more confident when parents of nonhandicapped children ask me questions than when parents of handicapped children as about their children.

1	2	3	4	5
Strongly Disagree	Disagree	Uncertain	Agree	Strongly Agree

6. A class in which all the children are at the same levels of development and abilities would be easier to teach.

1	2	3	4	5
Strongly Disagree	Disagree	Uncertain	Agree	Strongly Agree

7. A young child would have problems accepting a handicapped child as a playmate.

1	2	3	4	5
Strongly Disagree	Disagree	Uncertain	Agree	Strongly Agree

8. Nonhandicapped children frequently will imitate the inappropriate behaviors of handicapped children to get the teacher's attention.

1	2	3	4	5
Strongly Disagree	Disagree	Uncertain	Agree	Strongly Agree

9. Handicapped children will learn more efficiently if they attend special classes with other handicapped children.

1	2	3	4	5
Strongly Disagree	Disagree	Uncertain	Agree	Strongly Agree

10. It would be unrealistic to have the same goals for handicapped and nonhandicapped children.

1	2	3	4	5
Strongly Disagree	Disagree	Uncertain	Agree	Strongly Agree

APPENDIX E:

EXAMPLES OF PLAY UNIT CLASSIFICATIONS

Examples of Play Unit Classification

Simple Units	Complex Units	Multiplex Units	Super Units
String and beads	Teeter totters	Blocks or cars with blocks	Group projects (e.g., cooking experiences)
Stacking rings	Balance beams	Sand table with shovels	Housekeeping equipment
Puzzles	Recorder plays	Water table with containers	Playdough, cutters, & rolling pins
Books (without teacher)	Ball and bat	Workbench with hammers	Dress-up play materials
Peg boards	Connected telephones	Circus wagons with animals	Water play table with dishes and boats
Individual workbooks	Puppets	Paper, paints, and scissors	
Typewriters	Beanbag toss	Playdough with cookie cutters	
Graduate cylinders	Lotto games		
Montessori materials	Playdough		
Truck or car	Blocks		
	Doll house with furniture		
	Lego set		
	Flannel boards		

APPENDIX F:

THE CHILD INFORMATION FORM

Class ID# _____ Date _____

Child Information Form

Child's ID# _____ Age _____

Sex _____ Class Attendance _____

Handicapping Condition _____

Previcus Preschool Experience _____ No. of Brothers & Sisters _____

Birth Order _____

We would like to get more information about _____'s capabilities and behaviors while in your class. Please circle the phrase that in your estimation, best describes his/her behavior compared to the other children in your class.

Social Behavior

1. Playing with other children:
   a. He watches but does not play.
   b. He usually plays by himself.
   c. He plays with one or two other children.
   d. He usually plays with larger groups of children.

2. Initiating involvement--when other children are involved in an activity:
   a. He does not pay any attention to them.
   b. He observes but does not get involved.
   c. He sometimes will initiate getting involved in the activity.
   d. He frequently initiates getting involved in the activity.
   e. He nearly always initiates getting involved in the activity.

3. Disrupting others--when playing in a group he disrupts others:
   a. Nearly always.
   b. Frequently.
   c. Occasionally.
   d. Hardly ever.

4. When he plays in a group of with another child:
   a. He is never the leader
   b. He is occasionally the leader.
   c. He is usually the leader.
   d. He is almost always the leader.

5. Peer acceptance:
   a. The other children rarely choose him as a playmate unless the teacher intervenes.
   b. The other children sometimes will choose him as a playmate without teacher intervention.
   c. The other children frequently choose him as a playmate.
   d. The other children usually will seek him out as a playmate.

CHILD INFORMATION FORM B

CLASS ID# _____ CHILD ID# _____

CHILD'S BIRTHDATE _____

To your knowledge, has this child received any psychological, intellectual, or general developmental assessments or testing within the past year?

YES NO UNCERTAIN

If YES, please list the tests or assessment instruments used, the position(s) of those who tested the child, and the score the child received.

TEST/ASSESSMENT	TESTER (teacher, psychologist, etc.)	SCORE
_____	_____	_____
_____	_____	_____
_____	_____	_____

The following questions are to give us a more complete picture of this child's capabilities and behavior. Please select the best answer for each question based upon your observations and experiences with this child. EACH CHILD IS NOT EXPECTED TO BE ABLE TO DO EVERYTHING THE QUESTIONS ASK.

YES - CHILD CAN DO NOW OR HAS DONE IN THE PAST

NO - CHILD CANNOT DO NOW, HAS NOT DONE IN THE PAST, or YOUR ARE NOT SURE THAT THE CHILD CAN DO IT

R - CHILD REFUSES TO TRY

NO-OPP - CHILD HAS NOT HAD A CHANCE TO TRY

Questions adapted from Denver Prescreening Development Questionnaire, Wm. K. Frankenburg, M.D., University of Colorado Medical Center, 1975.

24 Month Check

1. Does this child copy what you are doing? YES NO R NO-OPP

2.	Does this child put <u>one</u> block on top of another without the blocks falling? This applied to <u>small</u> blocks (about 1 inch in size) and not blocks more than 2 inches in size.	YES	NO	R	NO-OPP
3.	Can this child say at least three specific words, other than "da-da" or "ma-ma," which mean the same thing each time he/she uses them?	YES	NO	R	NO-OPP
4.	Can this child take five or more steps backwards without losing his/her balance? You may have seen him/her do this while pulling a toy.	YES	NO	R	NO-OPP
5.	Can this child take off her/his pants or tops? Diapers, hats and socks do not count.	YES	NO	R	NO-OPP
6.	Can this child walk up steps without assistance? Circle YES if he/she walks in an upright position holding on to the wall or railing for support. Circle NO if she/he has to crawl up the stairs, if you do not let him climb stairs or if he/she has to hold on to a person or the next step.	YES	NO	R	NO-OPP
7.	Without your coaching, pointing or helping, can this child point to at least one of his/her body (hair, eyes, nose, mouth or any other part) when asked? Answer YES if he/she knows this well enough that the child will point when asked by a stranger.	YES	NO	R	NO-OPP
8.	Does this child feed himself/herself with a spoon or fork without spilling much?	YES	NO	R	NO-OPP
9.	Does this child help pick up toys or help carry the dishes when asked? Circle YES only if she/he completes either of these tasks.	YES	NO	R	NO-OPP
10.	Without holding onto anything, can this child kick a <u>small</u> ball (like a tennis ball) in a forward direction? Pushing doesn't count. Circle YES only if you have seen the child do this with a <u>small</u> ball.	YES	NO	R	NO-OPP

3 Year Check

11. When given a crayon or pencil and a piece of paper, will this child scribble on the paper? Circle NO if the child bangs or mouths the pencil or crayon. Circle YES if he scribbles without help or coaching. YES NO R NO-OPP

12. Can this child put four blocks on top of one another without the blocks falling? This applies to small blocks (about 1 inch in size) and not blocks more than 2 inches in size. YES NO R NO-OPP

13. Can this child put two words together when he speaks, such as "want milk" and "play ball"? ("Thank you" and "bye-bye" do not count.) YES NO R NO-OPP

14. Can this child name two of the following pictures without your help or coaching? (Animal sounds don't count.)

CAT
BIRD
HORSE
DOG
MAN

YES NO R NO-OPP

15. Can this child throw a ball overhand (not side arm or underhand) for a distance of five feet? YES NO R NO-OPP

16. Can this child follow all three of these verbal directions without your pointing or coaching?

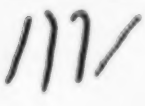
"Put the paper on the floor."
"Put the paper on the chair."
"Give the paper to me."

YES NO R NO-OPP

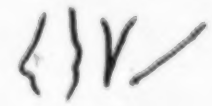
17. When shown an example like this and asked "Draw a line like this," can the child draw a straight line beside the model? Child should not trace the line.

LOOK AT THESE EXAMPLES TO SCORE

ANSWER YES



ANSWER NO



YES NO R NO-OPP

18. Can this child jump with both feet off the ground? YES NO R NO-OPP

19. Can this child put on his/her own shoes? The child need not tie them. YES NO R NO-OPP

20. Can this child pedal a tricycle at least ten feet? If this child has never had a chance to ride a tricycle his/her own size, circle NO-OPP. YES NO R NO-OPP

4 Year Check (Include Item 20.)

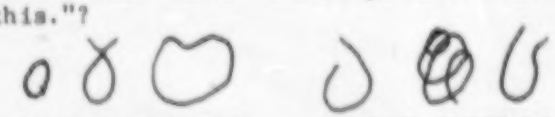
21. After or before eating, does this child wash his/her hands well enough so you don't have to do them over? Circle NO-OPP if you do not allow him/her to do this alone. YES NO R NO-OPP

22. Does this child put an "S" at the end of his/her words when he/she is talking about more than one thing such as blocks, shoes, or toys? YES NO R NO-OPP

23. Without letting the child hold onto anything, can this child balance on one foot for more than 2 seconds? YES NO R NO-OPP

24. Without letting the child take a running jump, can this child broad jump a distance of 12 inches or more? YES NO R NO-OPP

25. Can this child copy a picture of a circle when asked "Draw a picture like this."?



ANSWER THESE YES ANSWER THESE NO

YES NO R NO-OPP

26. Can this child put eight blocks on top of one another without the blocks falling? This applies to small blocks (about 1 inch in size) and not blocks more than 2 inches in size. YES NO R NO-OPP

27. Does this child play hide-and-seek, cops-and-robbers or other games where he/she takes turns follow rules? YES NO R NO-OPP

28. Can this child put jeans, shirt, dress or socks on without help (except snapping, buttoning and belts? YES NO R NO-OPP

29. Without your coaching or saying his/her name, does this child say both first and last name? Nicknames may be used in place of first name. Circle NO if child gives first name only or is not easily understood. YES NO R NO-OPP

5 Year Check - ANSWER QUESTIONS 30 through 37

30. Can this child button some of his/her clothing or doll's clothes? Snaps don't count. Mark NO-OPP if she/he does not have shirts or blouses with buttons. YES NO R NO-OPP

31. Can this child balance on one foot for more than 6 seconds without holding on to anything? YES NO R NO-OPP

32. Can this child copy a picture of the + when he/she is shown a picture like this?

Answer YES + X †
Answer NO -/- -†- T †

YES NO R NO-OPP

33. Can this child follow these four verbal directions?

"Put this paper on the floor."
"Put the paper under the chair."
"Put this paper in front of you."
"Put this paper behind you." YES NO R NO-OPP

34. Does this child react calmly and easily (without crying, whimpering or hanging on) when mother or father leave him/her at school? YES NO R NO-OPP

Continue through question 37 for 5 year old children.

6 Year Check

35. Can this child correctly point when you name these four colors: red, blue, green, and yellow. YES NO R NO-OPP

36. Can this child hop one foot two or more times without holding onto anything? Skipping doesn't count. YES NO R NO-OPP

37. Can this child dress <u>completely</u> <u>without help</u>? YES NO R NO-OPP

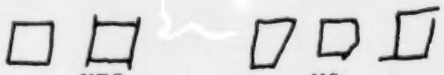
38. When the child draws a picture of a man without help, how many parts of the body does he/she include? When scoring, count any pair (eyes, ears, etc.) as one part.

a) Were at least three parts drawn? YES NO R NO-OPP
b) Were at least six parts drawn? YES NO R NO-OPP

39. Most small children play with large balls. Can this child catch a <u>small</u> ball, such as a tennis ball, using only his/her hands? YES NO R NO-OPP

40. Without holding onto anything, can this child balance on one foot for 11 seconds or more? YES NO R NO-OPP

41. When shown an example, can this child draw a picture of a square?



YES NO R NO-OPP

Answer YES <u>only</u> to a square which has four square corners and straight lines. Answer NO to any figure with rounded or opened corners.

APPENDIX G:

TABLE OF ADJUSTED $\underline{R}^2$ VALUES

Table 35

Estimates of Adjusted R^2 Values

Sets of Predictors	Computed R^2 value	Liberally adjusted R^2 value[a]	Conservatively adjusted R^2 value[b]
Handicapped children's levels of active social interaction	.22	.18	.07
Nonhandicapped children's levels of active social interaction	.31	.23	.18
Handicapped children's average levels of social play	.31	.24	.15
Nonhandicapped children's average levels of social play	.19	.16	.003

[a]Adjustments made for only the number of independent variables that entered into regression equations.

[b]Adjustments made for total number of independent variables.

VITA

Name: Carol Ann Wegley Brown

Birth Date: June 15, 1951
Meadville, Pennsylvania

Marital Status: Married

Educational Background:

1973	B.A. Psychology	Kent State University College of Arts and Sciences
1975	M.S. Family and Child Development	Kansas State University College of Home Economics
1979	Ph.D. Human Development and Family Studies (Minor: Education of Exceptional Children)	The Pennsylvania State University College of Human Development

Professional Experience:

Sept. 1979 - present: Assistant Professor of Child Development
University of Texas

Feb. 1979 - Aug. 1979: Student investigator and Co-director, BEH Student Research Grant (Grant number OEG-00-79-00010)
The Pennsylvania State University

Sept. 1976 - Aug. 1979: Bureau of Education of the Handicapped Trainee
Predoctoral Preparation in Applied Interdisciplinary Research (PrePAIR)
The Pennsylvania State University

Sept. 1975 - Aug. 1976: Graduate Assistant, HICOMP Project
BEH First Chance Project
The Pennsylvania State University

Sept. 1973 - May 1975: Graduate Teacher
Child Development Laboratory
Kansas State University